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THE BRICKBVILDER

VOLUME XXV MARCH, 1916 NUMBER 3

Diagrammatic Progress Schedules.

PART III.

By CHARLES A. WHITTEMORE.

IN considering the value of a diagrammatic progress schedule to a sub-contractor the same facts present themselves as make this form of record of such importance to a general contractor. It is a well known fact that the majority of general contractors to-day are primarily executive officers and do not operate directly as a mason or a carpenter contractor, nor specialize in any particular branch of the building industry. Their chief function under these conditions is to correlate all the efforts of their various sub-contractors and keep the machine in regular, efficient operation. The general contractor is the producing machine, and the sub-contractors are the parts which make the machine capable of production.

It is the sub-contractor, therefore, whose efforts must be maintained at the highest point of efficiency in order that the results shall be in accordance with the contract expectations. Control of his organization and knowledge of his products and producing powers are as essential to a sub-contractor as is his ability to get business and make a profit, and only by efficient administration of his organization can this profit be commensurate with his efforts.

The various heads of departments in a sub-contractor's employ should be able at a glance to report exact information about any work passing through the process of manufacture, and should be able to keep in actual control of all the work under their charge in order to secure efficient co-operation from all the employees.

In order to determine what functions should be predominant so that a schedule will best serve the interests of the sub-contractor, it may be advisable to analyze the relations which exist in construction work between a general contractor and those to whom he sub-lets the various divisions of his contract not directly under his control.

As is only too well known to architects, the selection of sub-contractors by a general contractor is not always determined by their efficiency or the merit of their work; it is, in the majority of cases, a selection based on the price quoted for the work, even though the general contractor may accept a little lower standard and a little lower grade of work than from the next contractor who may be a little higher in price. This is one of the evils of the present so-called "competitive system" of estimating which comes beyond the province of this article. In cases, however, where contractors are selected from a list controlled by the architects and owners and where the sub-contractor is selected from those estimating, and the arrangement is made that the general contractor shall co-operate with the sub-contractors so selected in order to produce the completed building, the value of the progress schedule to the sub-contractor still maintains.

There are three results which a general contractor demands from each of his sub-contractors: first, promptness in delivery; second, quality in product; and third, accuracy in installation. These are not the only features of the contract between the two parties, — and, as has already been noted, the selection of the sub-contractor does not necessarily depend on these three features, — but are vitally essential, and of these, promptness in delivery is the chief desideratum in present-day construction. This is true from the standpoint of the general contractor, but is not the most vital consideration from the standpoint of the owners or the architect. Fortunately, however, it is also true that a sub-contractor who is prompt in delivery of material, but who maintains a low standard of quality of product and workmanship, is not likely to receive so many contracts as the one who combines all the three virtues noted above.

Inasmuch as a progress schedule cannot represent in any degree quality of material nor quality of workmanship, it is only with the phase of manufacture and delivery that a progress schedule as maintained by the sub-contractor can be of value to himself, to the general contractor, and to the architect.

The schedule, if properly and efficiently maintained, will show to the general contractor the progress which his sub-contractor is making in his preliminary work in the mills or foundry, in the actual production of the finished material, and also in the deliveries at the building. And it is not alone with the actual receipt of material that the general contractor is vitally concerned. The first wish of the general contractor is naturally to deliver the completed building to the owners at the earliest possible moment consistent with the standard of workmanship which his organization represents, so that naturally he would demand from his sub-contractors the most efficient and speedy deliveries which they are able to make. Material must be at hand at such times as will be ready for use and not necessitate storage or extra handling; it must also be delivered in such a manner as not to cause a delay in installation. This is easily controlled by the progress schedule whether the building be in the same city as the shop or whether they be miles apart.

The sub-contractor in proceeding to arrange and maintain a progress schedule would enter first the dates of the receipt of the order, the date called for for completion of the order, and then the various subdivisions of his work.

The illustration (Figure 1) given herewith shows a progress schedule as adapted particularly to a factory producing ornamental iron, but with slight variations could be adaptable to any sub-contractor's work. This illustration will show how the sub-contractor can preserve a complete record of his materials and men, the production of his factory or shop, and the record of deliveries at the building.

The operation of such a schedule is so simple, requires so little time and no extra employees, and is of such great value if properly maintained, that it should be an integral part of every office equipment. The reasons for its use are so obvious that the only excuse for not adopting such a record seems to be unfamiliarity with the principles and advantages. After a very short experience the progress schedule becomes almost automatic.

The sub-contractor by the use of such a progress schedule as shown in Figure 1 is enabled to control not only his own organization and products, but those who execute parts of his contract outside of his own premises. The modeler, the carver, the foundry man, all become a working part of his organization and under his control even though the actual work is done at a considerable distance. He is able to check their progress and assure himself that the work is being carried on in a manner so as not to interfere with his contract liabilities nor cause any delay.

As with the general contractor, so it is with the sub-contractor, that one of the principal causes of disturbance and argument is the question of delay which continually arises. If at the completion of the building the general contractor is called upon to face a delay claimed by the owners, he must naturally search for the source of this difficulty. The first assumption a general contractor would be inclined to consider is that the delay is directly chargeable to his sub-contractors rather than to his own organization. The sub-contractor, therefore, who maintains the progress schedule can demonstrate beyond a reasonable doubt whether or not the delay is justly chargeable to him. Unfortunately for the sub-contractor it is too frequently a fact that the general contractor arbitrarily reduces the amount of his final payment by charging for delays, whether actual or imaginary, and the sub-contractor, rather than have the courts decide the merits of the case, accepts the deduction. It might be difficult to produce sufficient evidence to convince a court that the sub-contractor had no part in the responsibility for the delay. Time books and statements of mechanics or foremen are not in themselves sufficient evidence. No court in the country, however, would minimize the competency of the evidence of a progress schedule. This is particularly true of a schedule which has been reported monthly to the contractor.

There is still another phase of the sub-contractor's business in which a progress schedule can be of tremendous value to him, and that is in correctly checking and estimating his monthly requisitions. It is becoming more and more a common practice among architects to arrange for monthly payments to the general contractor, and these payments carry a certain sum for the sub-contractor, which sum the sub-contractor sometimes receives and sometimes unfortunately does not get at all, the general contractor holding it back for one reason or another.

The sub-contractor who properly operates the progress schedule finds that his work in making up his monthly estimate of work done is very much simplified. Those who do not use this process are required to approximate the amount of work already completed and delivered at the building by rule of thumb or by inaccurate or incom-

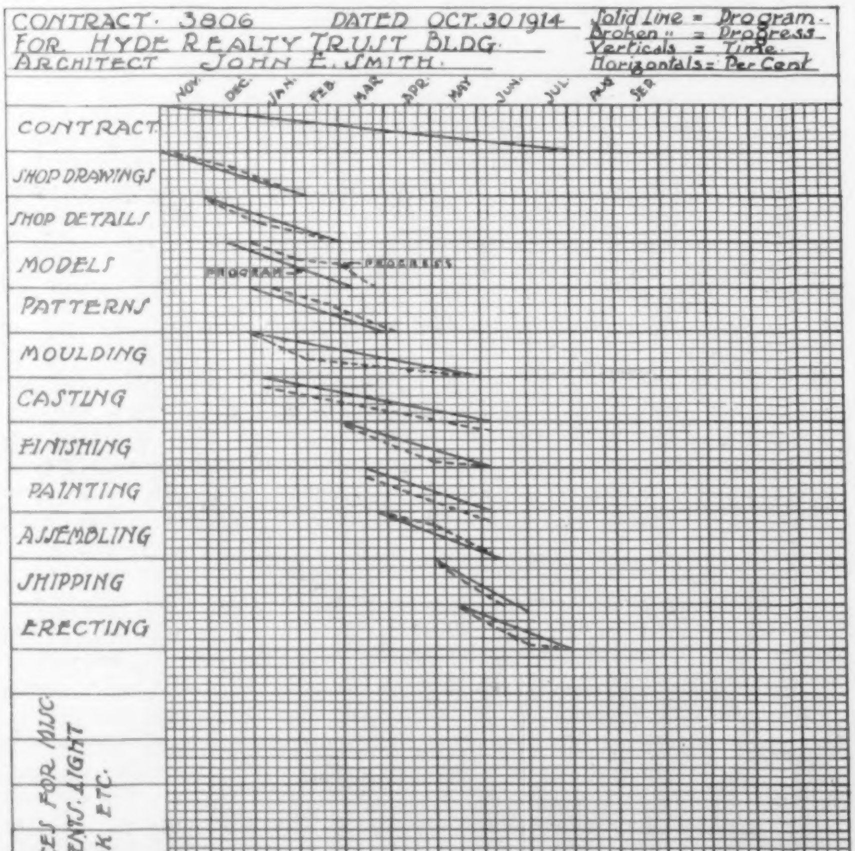


Figure 1. Type of Progress Schedule Adapted to Charting the Progress of the Manufacture of a Building Product

plete factory records. The progress schedule, however, shows at a glance just what proportion of work has been completed, and the general contractor upon receiving the requisition of the sub-contractor accompanied by a copy of his progress schedule can verify for himself the amounts due.

These monthly returns of progress schedules from the sub-contractor to the general contractor and from the general contractor to the architect and owner form an excellent basis for checking and terminating any incipient tendency to delay: for example, if the sub-contractor in forwarding his progress schedule to the general contractor shows by the progress lines that his work is up to the mark, there is no possible chance for the general contractor to claim delay on any point except installation at the building; if, on the other hand, the progress line shows a tendency to lag behind the point at which it should be, the general contractor can easily remedy this difficulty by calling to the sub-contractor's attention his liability in case of delay.

Another reference to the illustration (Figure 1) will clearly define the possibility of noting where delays occur in the progress of parts of the work. This gives an opportunity to determine at that particular time the exact cause of delay and also gives a very clear idea of how much greater speed must be developed in turning out the particular portion of the work previously delayed in order to make up the time lost.

As a concrete illustration of the working of this schedule, take, for example, the item "Models." The program line shows that the making of models should start on or about December 15 and should be completed on or about March 6. Instead of maintaining these dates, however, the models were not commenced until about January 1 and were completed about March 21.

The delay in delivering the completed models was necessarily the cause of a delay in finishing the patterns, but this delay was overcome by extra pressure in other departments so that the whole contract was completed at the time agreed upon in the contract. Reference to the "Models" progress line shows that the early part of the modeling was carried on at the rate of speed required to fulfil the conditions of the program, but that when about 40 per cent completed, the work slowed up appreciably and at about 55 per cent resumed a greater rate of speed than at first, which brought the date of completion nearer the program date than would have been the case were the contract rate of speed maintained from this point.

Upon investigation it appears that at the time when little was being done on the actual models in the shop, some models had been presented to the architects for examination and approval, and that the time thus consumed was greater than had been originally considered necessary in the establishing of the program.

The reason for the delay in starting the models was due to the fact that the information, after the completion of the shop details, had not been properly and quickly communicated to the modeler, which delay was directly chargeable to the sub-contractor.

In case the completion of the whole contract had been delayed, the responsibility for this, therefore, would have been automatically placed by this progress schedule on the organization of this sub-contractor. The delay in "Models" was not due to the lack of attention of the architect to the approval of models, but was due to the fact that the modeler selected was not able to fully interpret the architect's drawings without several trials.

One of the defects of this form of progress schedule is also apparent, as will be noted under the head of "Casting." The casting was commenced at the time specified

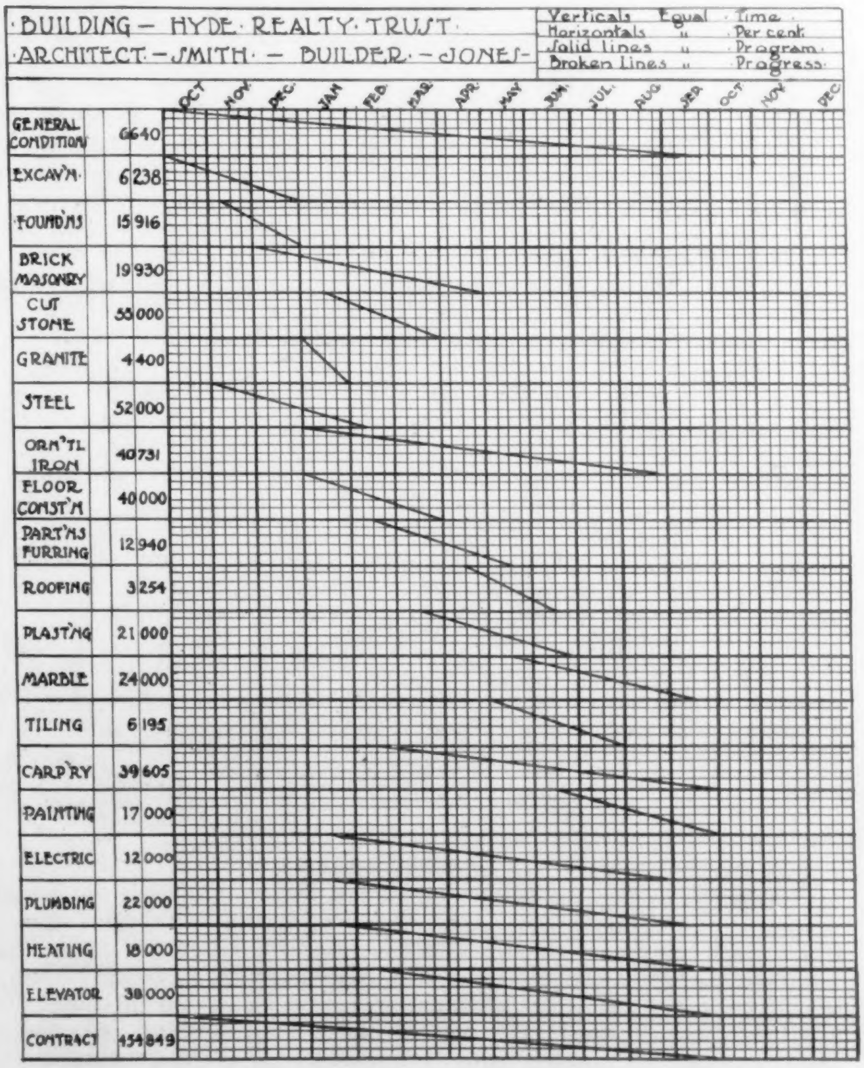


Figure 2. Type of Progress Schedule Particularly Adapted to Provide a Record of Operations for the Owner

in the program and was also completed at the time specified which would make the progress line and the program line coincident. In order, however, to illustrate the progress of the work, it was necessary to establish another line, which during the course of the casting process became a line parallel with that in the program. The completion of the "Casting" progress line, therefore, overlaps the item below.

A later form of schedule will indicate one of the methods used to overcome this defect.

In the form presented in Figure 1 there are other features which are equally subject to criticism and upon employment of a progress schedule this would be readily apparent. The fact remains, however, that there are a sufficient number of good points about this or any other form of progress schedule to counterbalance the effect of those points which might be considered of little value. The principal feature which the progress schedule, broadly speaking, maintains for the general contractor and the sub-contractor is in the actual checking of progress of their work, in the correlation of the different organizations into a single unit, and in the method by which potential disagreements may be disposed of in their incipiency in such a manner as to preserve harmony in all the different trades.

At a glance it would seem as though a diagrammatic progress schedule would be of little value to the owner of the prospective building except as a matter of curiosity and general interest, but this is far from the case. The owner is able by means of a progress schedule not only to prepare for his monthly payments on the certificates of the architect, but is also able to approximate payments for some time in advance.

The advantage of this is obvious in that many times the entire financing of the proposition is not completed at the time the contract is signed, and it is not definitely determined just how the loans shall be made in order to meet the payments at regularly stated intervals. An owner, however, by consulting his progress schedule may readily approximate months in advance, with a very close degree of accuracy, payments which may then be due, and is able to have sufficient time at his disposal to properly arrange these loans to his best advantage.

Without a progress schedule frequently a requisition comes in and certificates are issued by the architect for a greater amount than the owner anticipates, which may occasion a slight delay in arranging his payments for his contractors. This is a potential source of embarrassment, as contractors, as a rule, arrange all of their payments on the supposition that the money will be forthcoming as soon as the certificates of the architect are issued, and in many instances the contract is so worded that the payment must be made within ten days after the filing of the requisition. It is, therefore, obvious that anything which will give the owner a fair idea of how the payments will be requested a sufficient length of time in advance so that he may be able to provide for his loan, is distinctly a matter of interest to every owner and real estate operator.

Another way in which the progress schedule can be of tremendous value to the owner and real estate man is in approximating the time of completion and in checking over the progress in such a manner that he can determine whether or not there is any likelihood of dates of occupancy being subject to change. Where no progress schedule is employed it is necessary to rely entirely upon the hypothesis of the contractor as to whether or not there will be any delay until very close to the date of completion, at which time it is frequently embarrassing to the owner if he finds it necessary to substitute a new date in leases already arranged with tenants.

This diagrammatic progress schedule eliminates in a large degree the possibility of such an occurrence in that the progress of the contractor can be watched carefully through the months of construction, and whenever leases are made the relative status of the work, as compared with the status assumed under the contract, can readily be noted. This feature in itself should be sufficient to warrant the existence of some such record for the use of the owners of buildings. The feature of enabling him to approximate his probable payments to the general contractor is also of sufficient importance, but there are other features which the use of a progress schedule develops, which are in themselves of equal or greater importance than those enumerated.

Figure 2 illustrates a form of progress schedule which is particularly of value to the owners, real estate operators, and trustees of estates, in that it contains all these types of information, which is of extreme value to them during the process of construction of the building and which is of value to them as a record after completion.

An analysis of Figure 2 will show how exactly the owners or trustees can approximate in advance the probable payment which will be required on the first of any month. It will also show how a progress schedule will give the information in regard to the changes of dates of tenancy. Another factor of value of a progress record to the owners is in its comparative value in regard to other buildings already completed and other projects under way. Very frequently the owners in preparing for the erection of a new building find a record of a previous structure of inestimable value. The record, however, such as occurs in Figure 2, which on the completion of the building shows the duration of the various sub-contracts, is of far greater value than any other form yet produced, in that the owners may readily refer to the time consumed by any particular branch of the building operation rather than to be confined to the duration of the building operation as a whole, and by means of a schedule of this character a real estate operator or a trustee or an owner could closely approximate the time required for the construction of a building, even though it be a little different in character or larger or smaller than the one of which he has the progress schedule at hand.

Figure 2 will show the program lines only, the progress schedule not having been completed as this is purely a hypothetical case. It does show, however, how easily extensions can be made in various subdivisions of the contract or in various additional items of interest to the owner but not to the general contractor, such as vacuum cleaner, sprinkler system, insurance rates, land costs, assessments, etc., all of which can be added to this schedule with perfect facility making a complete record of the transaction.

The High School.

II. DOMESTIC SCIENCE, COMMERCIAL, AND MANUAL ARTS DEPARTMENTS, AND SPECIAL ROOMS.

By WALTER H. KILHAM.

THE domestic science department comprises accommodations for instruction in cooking, sewing, and housekeeping, and requires the space of at least four or five classroom units.

Cooking Room. The pupils' tables are placed in the form of a hollow rectangle or oval, with the teacher's demonstration table in the center, in much the same arrangement as described in a previous article (THE BRICKBVILDER, June, 1915) for the elementary school. A small gas stove on top of the table, with an aluminum plate under it, is often provided; but more recently each pupil is given a four-cover gas range complete with oven and all appliances, standing on the floor at the side of each table. Acting upon the theory of reproducing as far as possible conditions actually met with in most peoples' homes, a regular coal range is also installed, together with a kitchen sink and a "dresser" for dishes. A refrigerator and if possible a pantry should be added, and unless a "model flat" is included, there should be space for setting a dinner table.

Laundry, High School of Commerce, Springfield, Mass.
Kirkham & Parlett, Architects

Model Flat. The extent to which the development of the "model flat" is carried generally rests with the authorities. Some are contented with a small dining room, sometimes tastefully equipped with a fireplace, china cupboards, and "dome" electric light. With these surroundings the pupils practise the giving of dinner parties, act as hostesses, and are responsible for the entertainment of their guests. Other authorities add a bedroom, and some cities, New York for example, install a complete suite, adding living room, hall, kitchen, laundry and bathroom to the above. These may be arranged as a series of alcoves, about 8 feet square with one side opening to a continuous space about 8 feet wide where instruction may be given. At the other side of this space is a row of large store closets containing changes of furniture, pictures, rugs, and wall papers mounted on cloth, the pupil being given an alcove and expected to select harmonious decorations and furnishings for it.

Cooking Room, High School of Commerce, Springfield, Mass.
Kirkham & Parlett, Architects

Laundry. A complete laundry outfit is rarely installed, some earthenware trays with ironing table and electric irons being considered adequate.

Sewing Room. The sewing room requires blackboards, workcases with racks, and cases of special design for materials and work. For dressmaking, a separate room is necessary with dressing booths, either built in or made by curtains. A sink or basin with running water is needed, and outlets for electric irons for pressing, etc. The following list gives the equipment as installed in schools built in Boston, Mass.:

- 30 Portable tables (inserted yard measure).*
- 50 Chairs in girls' school* and
- 30 In mixed schools, varying in height from 14 to 21 inches from floor.*
- 1 Glass show case about 8 feet long, 2½ or 3 feet wide.
- 1 Cutting table, 8 feet long, 3 feet wide, and 2 feet 6 inches high, inserted yard measure, 3 drawers in table, blackboards, minimum of 30 square feet.
- Closet for teachers' wraps.
- Stationary wash bowl with running hot and cold water.
- 1 7½-lb. electric iron.
- 1 4-lb. electric iron.
- Standard box rack with box for each girl. (See drawing.)
- 1 Sewing machine for 500 or fewer girls.

The Commercial Department. The rooms of this department require little in the way of special equipment unless a bank is included. This should face either on a corridor or be near it, so that a school savings bank system may be handled through it if necessary. Its construction is shown by the illustration. Some rooms are generally equipped with special desks for instruction in bookkeeping, stenography, and typewriting, the number of these rooms depending upon the purpose of the school. An

* Not required when no regular "sewing room" is available.

office equal in size to about a third of a class room is a useful feature when it can be provided.

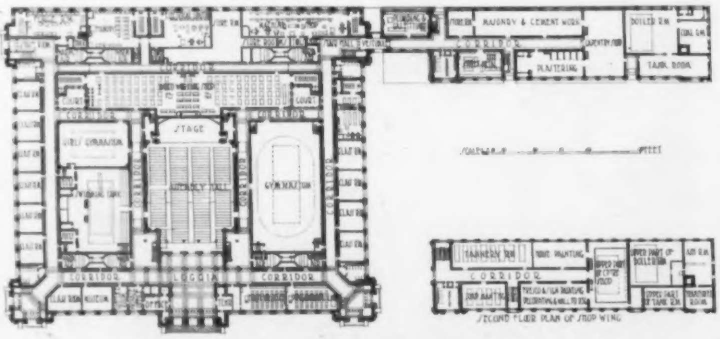
The Manual Arts Department. The development of this branch of high school instruction has afforded perhaps the most striking feature of modern high school planning. It forms the most popular feature of high school work, being barely equaled by the commercial department, and it provides a striking indication of desire of American boys for technical and practical in preference to general or classical education. The writer of these articles does not intend to venture into a field which is properly purely one of pedagogy; but his observations in this respect have led him to the belief that in spite of the large sums of money appropriated by many cities for this purpose, there has been a failure of efficiency in reaching the ultimate object desired. The public school is of necessity a school for the masses, and it is the boys coming from the homes of the masses who need training in manual work of a practical sort. Too much "kid-glove" atmosphere is ruinous to this sort of training. Some large cities have recognized this and are showing a tendency to erect separate buildings for Manual Arts or "Vocational" High Schools, but even when this is done, the writer believes that the coeducational feature should be avoided and the boys' departments kept rigidly separate.

Bank in High School of Commerce, Boston, Mass.
C. Howard Walker and Kilham & Hopkins, Associated Architects

In smaller cities this cannot be accomplished because of the expense, and obviously the carpentry, machine tool, and forge work have to be carried on in the same building with the regular courses. When this occurs it is highly desirable to separate these portions of the building as much as possible from the rest, so as to prevent the noise resulting from their operation reaching the rest of the building.

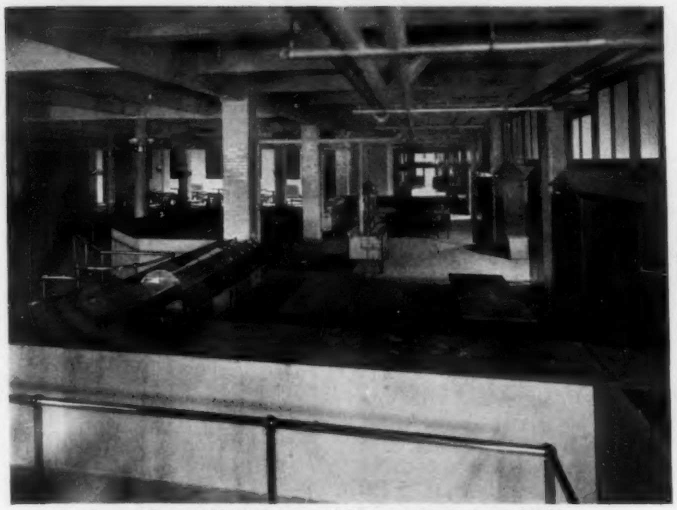
This has been admirably accomplished in the Carter Harrison Technical High School at Chicago, of which Mr. A. F. Hussander is the architect, and the plans reproduced here are worthy of careful study. The woodworking, machine tool, foundry, forge room, and electrical construction departments are arranged at the rear of the building in a manner to interfere as little as possible with the other exercises of the school. Adjoining this section is a two-story wing, running off at right angles to the side of the building and containing besides the power plant space for instruction in carpentry, masonry, plastering, sheet metal work, house and sign painting, plumbing, and gas fitting, and even tanning and soap manufacturing.

The spaces for these various departments are arranged along a 12-foot corridor and are separated from each other by masonry walls. While much thought has been given to the arrangement of this department, it is worth while to consider whether much of this work could not be efficiently handled in a long, factorylike building free from permanent partitions. Such an arrangement would approximate more closely actual shop conditions and allow much greater flexibil-



First Floor Plan, Carter H. Harrison Technical High School

Carter H. Harrison Technical High School, Chicago, Ill.
A. F. Hussander, Architect



Lunch Room, High School of Commerce, Springfield, Mass.
Kirkham & Parlett, Architects

ity of instruction. Manual and vocational instruction is still passing through a period of development and is liable to many changes, even from year to year, causing variations in the amount of floor space demanded, and it would seem to be a mistake to define by permanent walls the portion allotted to each branch, when the work could probably be as well carried on by groups working in different parts of one long room.

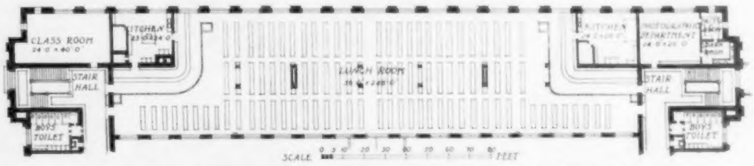
Adequate wash rooms are an essential part of this department, for in order to save time it is necessary to allow an entire section to wash at once and similarly ample lighting is highly essential. By arranging these rooms in wings at the rear of the building many of them can be skylighted and at the same time easily ventilated.

Raised steps for demonstration seats are often, but not always, provided in one corner of the workrooms.

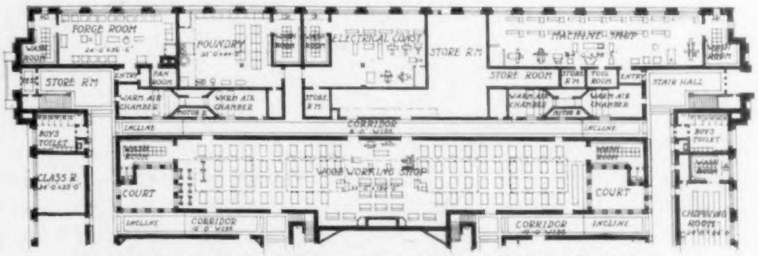
Another arrangement of similar nature to that of the Chicago school is in the Central High School at Minneapolis, Mr. William B. Ittner, architect, where the section allotted to metal working is placed at the rear in a low wing on one side of the center, and a corresponding wing containing the woodworking department at the other side, each being skylighted. Each of these wings also contains the additional feature of a small lecture room with raised seats and blackboards. It is needless to say that the construction and finish of this portion of the building ought to be of the plainest and most durable description. The walls should be of painted brick and free from plaster or other easily damaged material. Salt glazed brick may be employed if desired for the lower portions. The floors in the woodworking rooms are best made of waxed maple, while cement is suitable for the machine tool room. A floor of wood paving blocks is admirable for the forge room and foundry and if made of round blocks it will not give trouble by swelling and shrinking. Such a floor obviates the danger from flying fragments of concrete and a slight amount of dampness occurs which is desirable for the moulding sand.

Lunch Room. Another very modern development of a high school is the lunch room. Until very recently this has been located in the least attractive portion of the building and usually restricted to the space in the basement directly behind the front steps, which, being badly lighted, has not been available for any other use. The accommodations were generally limited to a counter with perhaps a small storeroom and gas stove, and slight provision was made for the comfort of pupils while eating. Tables and chairs were unknown and the eating was done in the corridor.

Recent years have shown a material change in this condition of affairs, and the lunch room has not only become an organic part of the establishment, with carefully thoughtout provision of adequate space for the pupils, but also care is now taken to make the lunch room an attractive part of the building. The temptation still remains to locate it in the basement, the space under the auditorium being naturally the most available now that the basement gymnasium is becoming



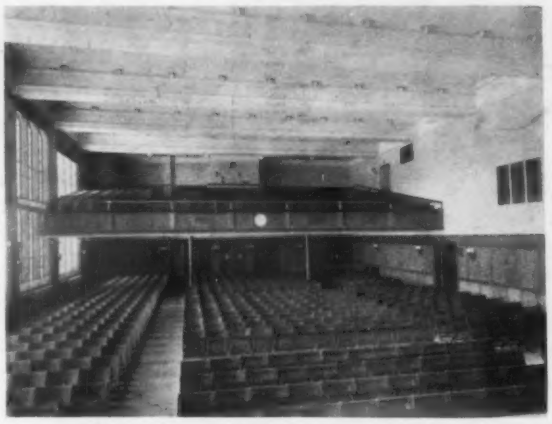
Plan of Lunch Room in Basement, Carter H. Harrison Technical High School



Plan of Manual Arts Department, Carter H. Harrison Technical High School

Interior of Woodworking Shop

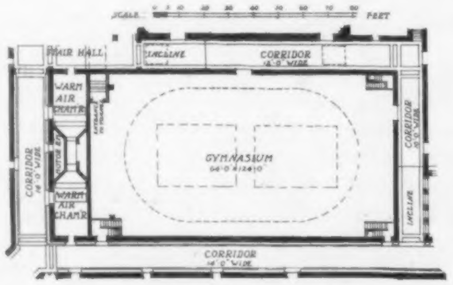
Carter H. Harrison Technical High School, Chicago, Ill.
A. F. Hussander, Architect



Assembly Hall, High School of Commerce, Boston, Mass.
C. Howard Walker and Kilham & Hopkins, Associated Architects

a thing of the past. This generally gives sufficient area, but is apt to be dark and of insufficient height. It is explained in defense of this plan that the pupils at the best spend only a short time at lunch, the tendency of the rising generation being against "Fletcherizing," and that after lunch they wish to go out of doors; hence, a location near the ground is desirable and sunlight is not essential. The recently built Chicago high schools, however, contain lunch rooms in the upper stories, that in the Carter H. Harrison being located in the second story and that in the Nicholas Senn, on the roof. The Washington Irving High School in New York contains three lunch rooms, all located above the ground floor. The lunch room at the Carter Harrison School is 58 by 248 feet in size, 14 feet high, and is lighted by ranges of windows on each side. There is a kitchen with serving counter at each end with a rail to keep the pupils in line. On entering the room through a door leading to the space inside the rail, each pupil obtains a check, then successively takes from the counter a tray, a plate, knife and fork, paper napkin, and such articles of food as he desires. On leaving the "queue" his slip is punched to the proper amount by an attendant and he goes to a table. Drinking water is obtained from fountains located at the side of the room through faucets, which can be turned on by pressing the tumbler against a bar, obviating the necessity of touching them with the hands and allowing a pupil to obtain two glasses of water at one time. Cashiers stationed at each of the two exits from the room receive the money and checks from the pupils as they pass out. The serving equipment requires a counter with shelving, kitchen with gas apparatus, dish washing appliances, storeroom, refrigerator, etc.

The accompanying illustration shows the lunch room at the High School of Commerce at Springfield, Mass., Messrs. Kirkham & Parlett, architects. This is located in the basement under the assembly hall. The walls are lined with glazed brick for their full height and the pupils are seated at small round tables, each supplied with four chairs.

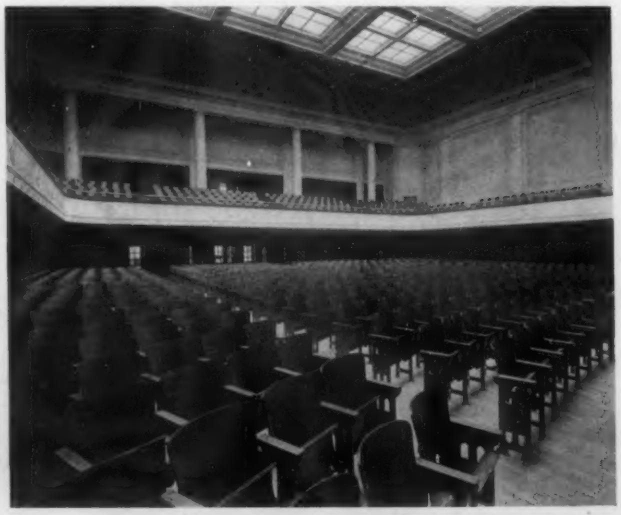


First Floor Plan of Boys' Gymnasium
Carter H. Harrison Technical High School
Chicago, Ill.
A. F. Hussander, Architect

Music Room. Many cities require a room where singing and chamber music can be taught. A room about the size of one and one-half or two class rooms will be sufficient and it may have a small stage. White paint and Ionic pilasters are usual but not obligatory. Other schools omit the music room and substitute a room equipped as a large class room or study hall, sometimes handsomely paneled, where elocution and oratory may be practised. No definite rules can be laid down for the design of these rooms that will apply in all cases.

Mechanical and Free Hand Drawing. The rooms for drawing classes are best located on the north side of the building so as to profit by the steady light. There is some

View Looking Toward Stage



View Looking Toward Rear Balcony

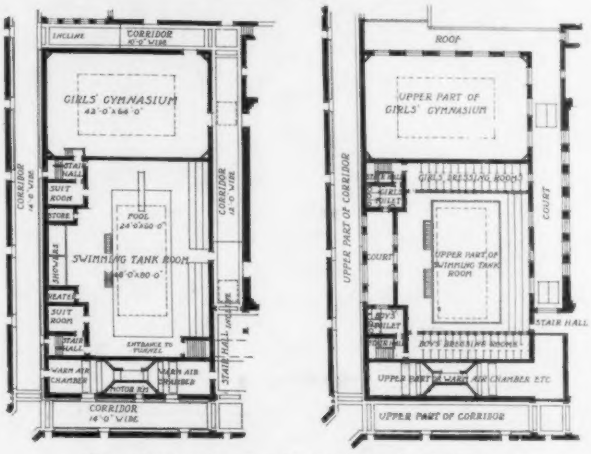
Assembly Hall, High School of Commerce, Springfield, Mass.
Kirkham & Parlett, Architects

advantage in keeping the mechanical drawing class near the manual training department, but the free hand drawing room may well be located in the top story where skylights can be had. The best form for the latter is the "saw-tooth," with windows toward the north or high windows in the wall, similar to those in a studio. These rooms require a large sink with faucets high enough to permit of washing drawings, facilities for blue printing, and racks and cases for drawing boards, etc. Blackboards are desirable as well as tack boards for hanging drawings.

Botanical Laboratory. This department may be about the size of an ordinary class room. A sink is necessary and also cases and drawers for specimens. An ideal arrangement is to locate this room on the ground floor on the south side and have adjoining it a greenhouse, and if the land permits a small garden.

Assembly Hall. This subject has already been touched upon in a previous article dealing with the elementary school (THE BRICKBVILDER, June, 1915) and but little remains to be added. For a high school it will usually be necessary to introduce a motion picture booth with vent, and frequently to provide space for an organ, while on the whole a more elaborate architectural scheme is generally expected.

View of Swimming Tank Room



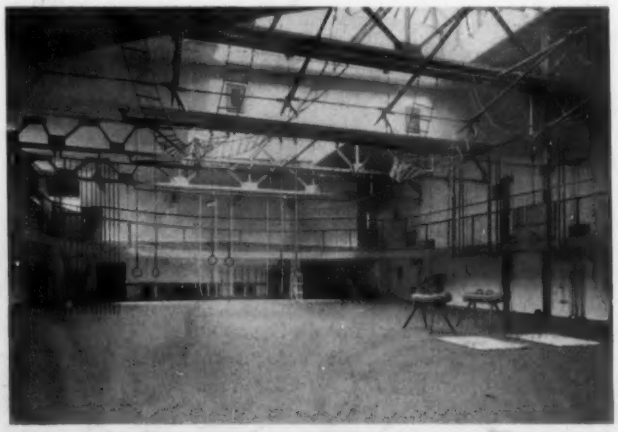
First and Mezzanine Floor Plans of Swimming Tank Room

Carter H. Harrison Technical High School, Chicago, Ill.
A. F. Hussander, Architect

Gymnasium. Gymnasiums have now become pretty well standardized and a school gymnasium will not vary greatly from one designed for a Y. M. C. A. Side galleries for spectators are desirable, together with rooms for the physical director, extra apparatus, and for the visiting team, drying room, sterilizer, etc. In fact, this part of the building deserves more consideration than can be given to it in this paper. Where the school is coeducational and of sufficient size, two gymnasiums are desirable or a single large gymnasium may be built, divided into halves by a removable partition. Very large schools may have two or more gymnasiums.

The swimming tank has now become an important feature and most large schools make some provision for one. At the Carter H. Harrison School in Chicago the tank is 24 by 60 feet, graded from 5 to 7 feet deep. The boys' and girls' dressing rooms are arranged in the gallery, which also contains seats for spectators. On the main floor are rooms for bathing suits, storerooms, and showers. The floor around the tank is of cork carpet and the combination draining groove hand rail is used.

Gymnasium, High School of Commerce, Boston, Mass.
C. Howard Walker and Kilham & Hopkins, Associated Architects



Gymnasium, Carter H. Harrison Technical High School, Chicago, Ill.
A. F. Hussander, Architect

The New York Orthopaedic Dispensary and Hospital.

YORK & SAWYER, Architects.

By LINDLEY M. FRANKLYN.

THE work of this charitable institution consists in the treatment of crippled children and adults administered in the dispensary, in the hospital, in the home by the visiting nurses, or at the country branch for convalescents at White Plains, N. Y.

The special conditions which the architects had to study in designing a building to house this institution, and which proved to be the controlling factors in determining the plan, may be stated briefly as follows:

1. The site is in the middle of the block. It has a frontage of about 88 feet on 59th street and 127 feet on 58th street, the level of 58th street being four steps higher than 59th street.

2. A single entrance was required for all employees, patients, and visitors.

3. Numerous small rooms were necessary, and to light these a building with a long perimeter.

4. A very large dispensary, well lighted, with good natural ventilation, had to be arranged conveniently for the surgeon to attend to his four classes of patients: new, continued, male, or female.

5. Ten-bed ward units were determined upon; at least three units to be placed upon a floor.

With these fixed conditions the problem was to plan a hospital which should have not only light wards and a well arranged dispensary, but an enormous basement, covering 80 per cent of the lot, in which practically every room should have good, natural light and ventilation. After thorough study and the preparation of numerous schemes, the cruciform plan was selected, as it proved by comparison to be the best solution of the problem fulfilling all the requirements.

By referring to the floor plans it will be seen that the first, second, and third floors cover less area than the floor below, and that there are no enclosed courts above the basement. Planned in this way, it is possible to provide additional overhead lighting for the more important rooms in the lower stories; and even in the basement the kitchen, laundry, servants' dining rooms, and most of the bedrooms have direct sunlight for a good part of the day.

The building is of the most modern type of fireproof construction. The exterior walls are self-supporting, the structural steel carrying only the floor loads. The floor construction is of reinforced cinder concrete and the partitions of hollow terra cotta tiles. The horizontal pipe lines are run below the floor construction and the ceilings hung below these lines. Access doors, flush with the plaster, are provided wherever there are valves or clean outs.

The two main staircases, located in the north and south parts of the building, are entirely enclosed and separated from the corridors by fireproof doors. The elevators, directly across the corridor from the staircases, are equipped with self-closing doors and a check to prevent the doors striking when they close, thus avoiding noise. A fire-escape stairway leads down from the main roof into the northeast court.

Open-Air Loggias in Northeast Court

The exterior of the building is designed in the Renaissance style of northern Italy. The wall surfaces are of stucco and the cornices, trim, copings, and sills of a special red terra cotta. The sloping roofs are covered with tile of the same color as the terra cotta. The windows on the ward floors have transoms hinged at the bottom to swing in.

The interior finish throughout is as simple and inexpensive as is consistent with good hospital construction. There are painted cement floors in the sub-basement and basement, and in the bedrooms for the staff, nurses, and servants. The kitchen department, however, the laundry, most of the rooms in connection with the dispensary, the operating suite, dressing rooms, pantries, and the toilets and baths have tiled floors. A special colored battleship linoleum is used in the offices, gymnasium, wards, quiet rooms, and in the ward corridors, with a terrazzo sanitary base and a floor border flush with the linoleum. At the junction of the linoleum and terrazzo (which are flush) there is a built-in brass strip which not only serves as a guide for running the terrazzo, but also protects its edge until the linoleum is laid.

Tile wainscots set flush with the plaster are used in the kitchen, pantries, operating rooms, dressing rooms, plaster rooms, and in the toilet and bathrooms. The interior doors throughout have steel framed trim, flush with the plaster, thus avoiding the use of wood. In the corridors, wards, and certain other rooms there is a painted dado about four feet high, so that the lower portion of the walls when defaced or finger marked may be repainted without touching the upper portion.

The plant for supplying heat, power, light, ventilation, and refrigeration, and the suction and hot water tanks, filters, and pumps, are in the sub-basement at the south

Operating Room Showing Visitors' Gallery

end of the lot. The heating is by direct radiation. The ventilation, reduced to a minimum, is divided into five separate units, namely, a fresh air supply and exhaust system for the sub-basement; an exhaust for the brace shop department, X-ray rooms, gymnasium, and waiting room; an exhaust for the laundry, kitchen, and pantries; an exhaust for the toilets, baths, and maids' closets; a fresh air supply and exhaust system for the operating suite. This division of the ventilation into small units is economical, as the independent fans are only operated when the rooms which they ventilate are in use. In general, natural ventilation is relied upon rather than artificial.

All supplies, except those for the brace shop, are delivered at the service entrance on 59th street and dropped to the receiving room in the basement on an electric lift. When unpacked and checked, they are taken to the adjoining store rooms.

Directly across the corridor from the receiving room is the entrance to the kitchen department. Here are storerooms for groceries, canned goods, etc., a cooled vegetable room, three large refrigerators, and an ice-cream room with a stock ice-box, power ice crusher, and power freezer. The kitchen, lighted on the south and overhead, is completely equipped with modern cooking apparatus. Two automatic power dumbwaiters, serving the pantries, open directly from the kitchen. The servants' dining rooms are on the opposite side of the main corridor.

The laundry, lighted on two opposite sides, is equipped with individual motor-driven apparatus. Directly across the corridor are rooms for soiled linen, general linen storage, and assorting and marking.

The brace shop with its auxiliary rooms for polishing and grinding, forge work, sewing and leather work, storerooms and office, is on the 58th street side of the lot. There is a separate entrance from the street for supplies for this department. The shop has windows on three sides, the polishing and grinding room has overhead light and windows on opposite sides, opening on areas, while the leather and sewing rooms have north light. All machines are individual motor driven.

In the basement also there are bedrooms for the male help, a room where plaster jackets are made, a sterilizer large enough to take mattresses, a carpenter shop, storerooms, and toilet and locker rooms for the female day help and other employees. The engineer's and foreman's toilet is also on this floor instead of in the sub-basement on account of the high level of the sewer.

The entrance on 59th street is the only one on this floor (the door on 58th street serving only as a fire exit). Opening directly from the entrance lobby are the office, reception room, consultation room, and telephone booth with the various offices, locker and toilet rooms, and the board room in close proximity. Doctors, nurses, and visitors going to the wards or operating suite take the first elevator without passing through the dispensary.

The waiting room opposite the entrance is planned so that every one entering or leaving the dispensary passes in front of the registrar's desk. Opening from this room are two toilets, and behind the registrar are the history library, and the head visiting nurse's office. Adjacent is a room where plaster casts are taken and prepared for the brace shop, another where the patient's history is recorded, and two toilets.

The main dispensary room, separated by a short corridor from the waiting room, is two stories in height and lighted by ten large, circular headed windows. It is designed with a vaulted ceiling. The floor is of buff quarry tile with a black terrazzo base and border, and the walls show a high, painted wainscot. The clerk's desk is in the center of the room with a stairway to the basement directly behind it. The screens, of reinforced cement plaster supported on brass legs, divide

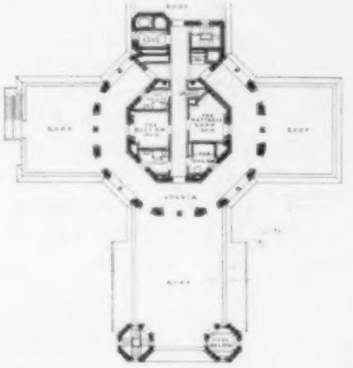
Typical Pantry Connected by Dumbwaiter with Kitchen

View of Kitchen in Basement

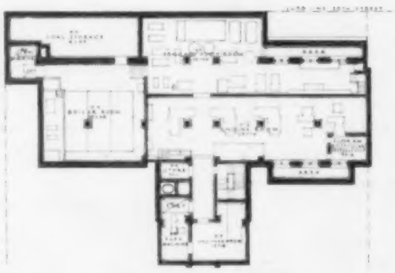
the room into the several departments for examination and treatment.

The dispensary operating room, the scoliosis department with a large gymnasium, dressing rooms, office, and plaster room, and the X-ray department are in the south wing. The X-ray is planned with the coil room between two operating rooms, each furnished with small dressing rooms. Across the corridor are the dark room, library for developed plates, and the view room. The operating rooms, dark room, and view room have light-tight sliding shutters at the windows with a light-tight ventilator below the sill.

The living quarters for the superintendent and internes are on the second floor in the 59th street wing. The contagious wards are between this wing and the upper part of the dispensary and are isolated from the rest of the building. This is a complete unit with two wards opening on flat roofs, toilet, diet pantry, and a nurses' room with bath. This department is entered through a vestibule where the doctor may wash and change his gown. The maids' quarters are in the 58th street wing on this floor.



Plan of Roof



Plan of Sub-Basement

The entire third floor is devoted to living quarters for the supervisor of nurses, housekeeper, and the nurses. The five bedrooms in the west wing are shut off by a corridor door and occupied by the night nurses. On this floor there is also a dining room with its pantry, a sitting room with casement sash opening on a balcony, a reception room, a sewing room, and a kitchenette.

The fourth, fifth, and sixth floors are each occupied by three ten-bed wards controlled by the charge nurse, who has her desk in the central hall. The fourth floor has wards for men and boys, the fifth for women and girls, and the sixth for children alone. Each unit is separated from the main corridor by double doors and consists of a ward lighted on three sides, a dressing room, and a toilet and bath room. The loggias open directly from the central wards and from the main corridor. On each of these floors there are also two quiet rooms, a diet pantry served directly from the kitchen by two power dumbwaiters, an alcove off the main corridor with a lavatory for the doctors, a nurses' toilet, and closets for ward accessories, patients' clothes, linen, etc. On the fourth floor there is an office for the supervisor of nurses and an admitting room where patients are examined and bathed before being placed in the wards.

The operating suite at the north end of the first ward floor is planned with the main operating room in the center, with the anesthesia, plaster, preparation, and sterilizing rooms opening from it. The small septic operating room adjoins the preparation room and is conveniently near the room for anesthesia. The work room for the preparation of bandages, pads, etc., is to the west of the sterilizing room. There is also a doctors' locker room with toilet and bath and an office for the chief surgeon. The recovery room is just outside the suite.

The main operating room is arranged with an amphitheater seating forty-six. This is reached by the students and visiting doctors by an inclined passage from the floor above, thus obviating the inconvenience of having visitors in the operating suite. The seats in the gallery are supported on brackets and made of cast-iron, modeled in the form of a bicycle saddle. This type is not only sanitary, but take so little space from the passageways as to enable the observers to be placed much closer to the operation than is usual. The room is lighted by a north window and skylight constructed of steel and glass and provided with condensation gutters. Inside the window is a glass screen in a steel frame. As hot air is introduced between the sash and this screen, there is no down draft even in the coldest weather. The floor and wainscot in both operating rooms are of dark green tile, while the upper walls are of plaster painted a light color. With this dark wainscot and floor, the surgeon, looking up from the patient, does not encounter a glare of light and find his eyes useless for a moment when he returns to his work, as is the case with white floor and walls. The ventilating apparatus for this department is in the attic space directly above the operating suite.

The drug room and laboratory are on the fifth floor. The latter is equipped for doing all the necessary pathological, bacteriological, biological, and chemical work of the hospital. On the sixth floor is an autopsy room and an isolation room with its bath and toilet room.

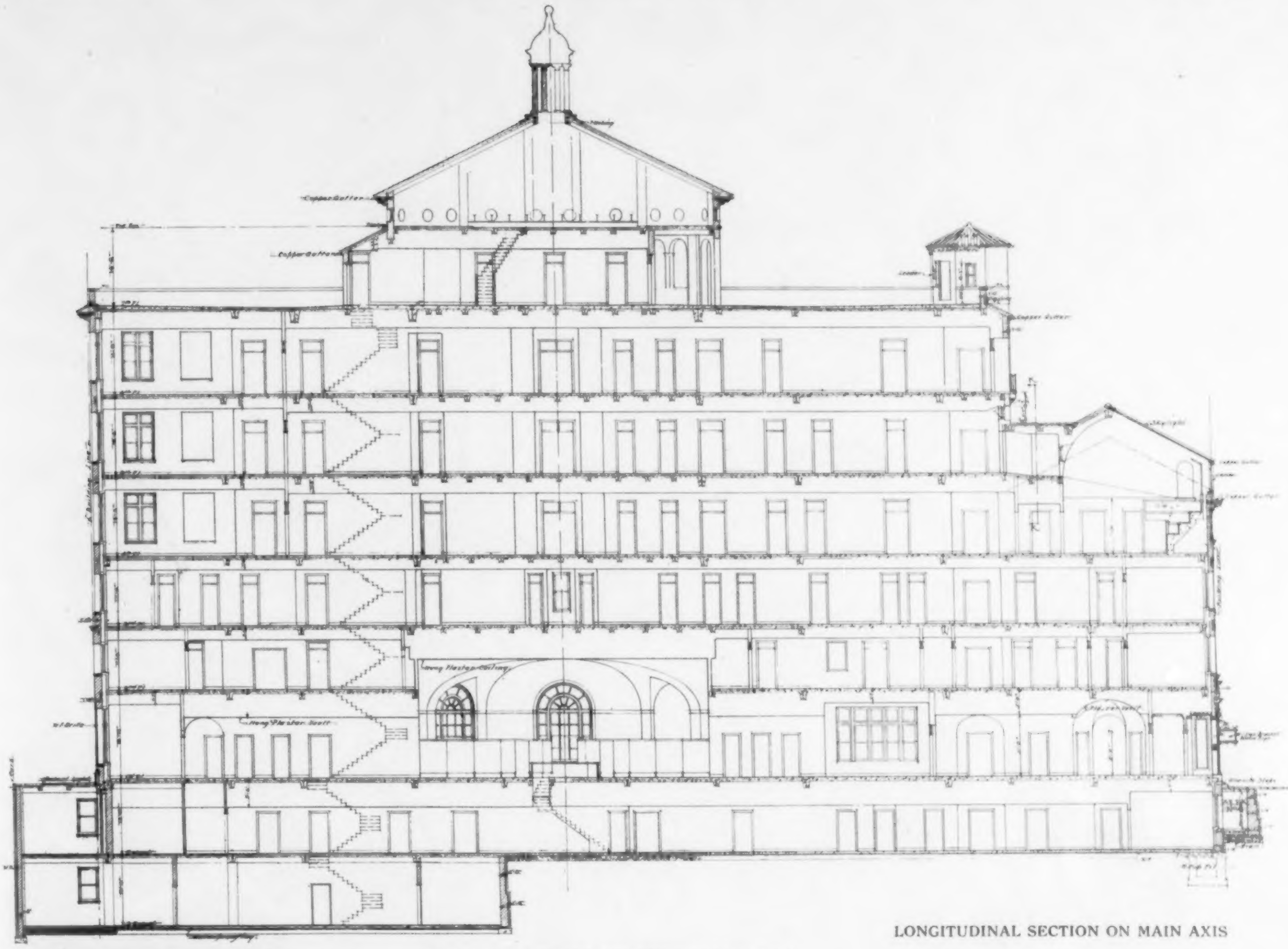
Only the central portion of the building is carried up above the seventh floor, thereby leaving a large area of flat roof for outdoor treatment and recreation. The loggia in the center gives ample protection in stormy weather. On this floor is a rest room for nurses, two toilets, a mattress room, and a tank room in connection with the refrigerating apparatus. A stairway leads to the attic space above, where are located the house tank, two of the exhaust ventilating fans which discharge the foul air through the cupola, and considerable storage space.

There are nine wards planned for ten beds each, or a total of ninety ward beds. Six quiet rooms, a two-bed isolation room, and six beds in the isolation department make a total of one hundred and four patients' beds. There are twenty-eight single rooms for nurses, three suites for the superintendent, supervisor of nurses and housekeeper, four rooms for internes, accommodation for twenty maids and five male help, giving a total bed capacity of one hundred and sixty-four.

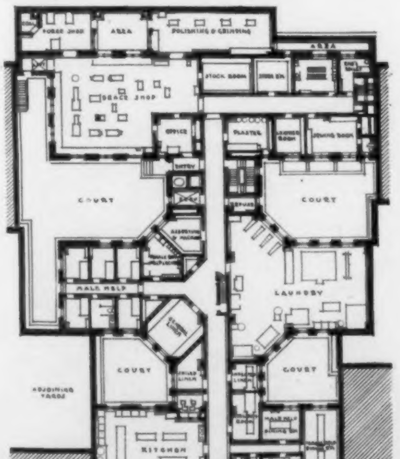
EAST 59TH STREET FACADE

NEW YORK ORTHOPAEDIC DISPENSARY AND HOSPITAL, NEW YORK, N. Y.

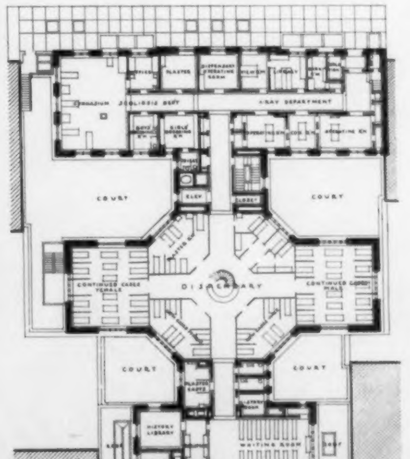
YORK & SAWYER, ARCHITECTS



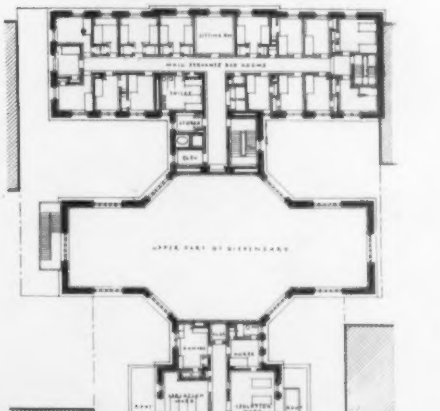
LONGITUDINAL SECTION ON MAIN AXIS



BASEMENT FLOOR PLAN



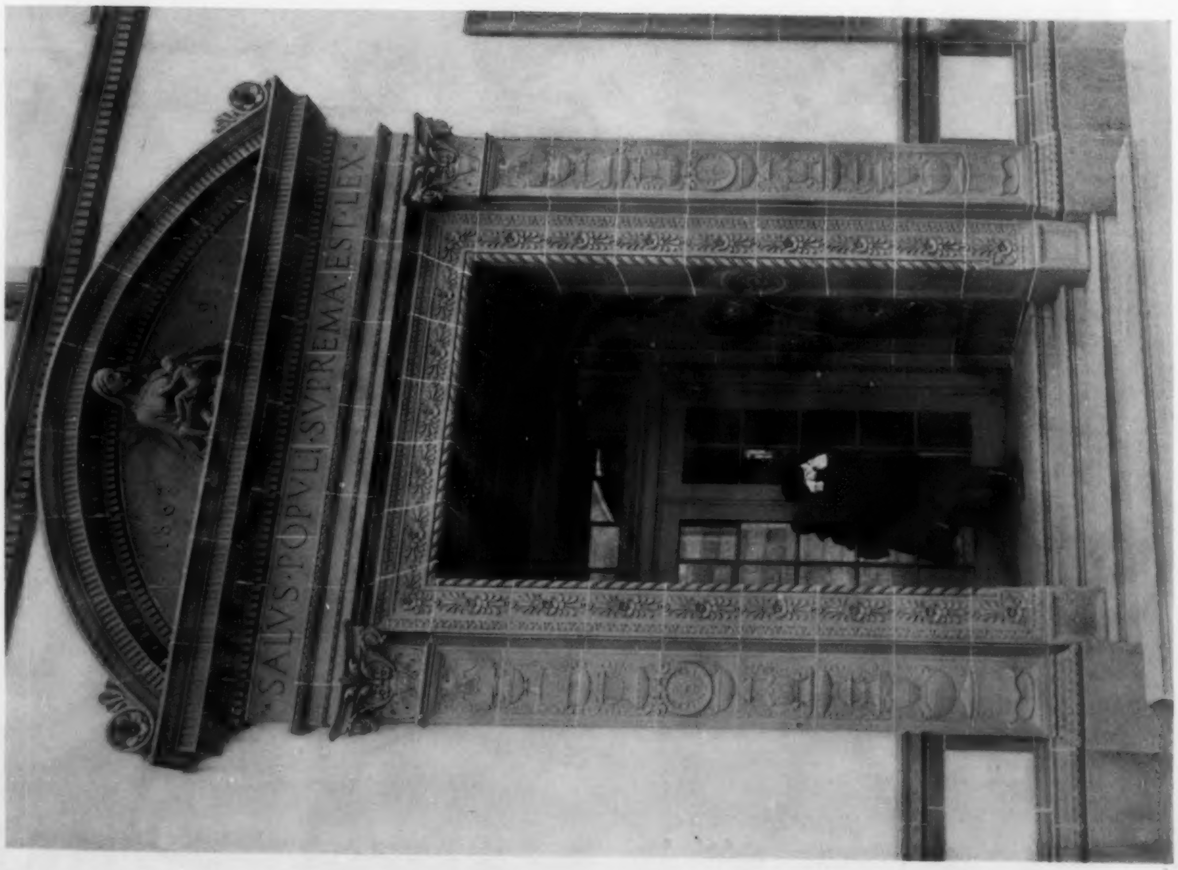
FIRST FLOOR PLAN



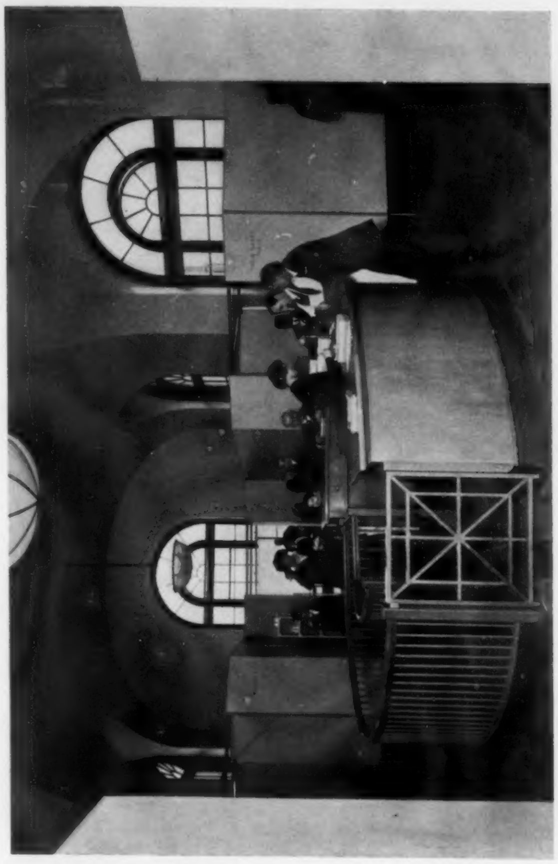
SECOND FLOOR PLAN

NEW YORK ORTHOPAEDIC DISPENSARY AND HOSPITAL, NEW YORK, N. Y.

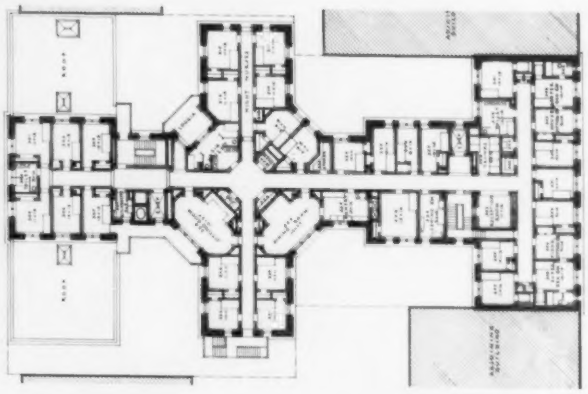
YORK & SAWYER, ARCHITECTS



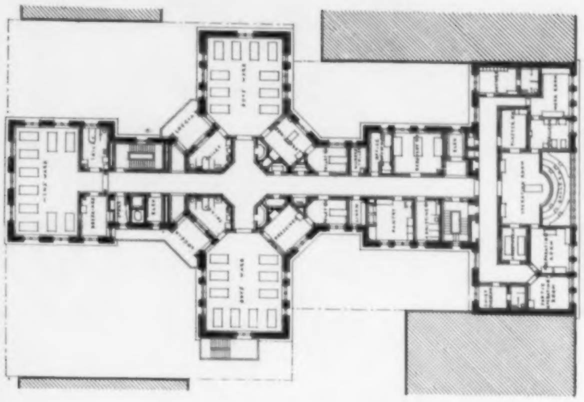
DETAIL OF ENTRANCE



DISPENSARY



THIRD FLOOR PLAN

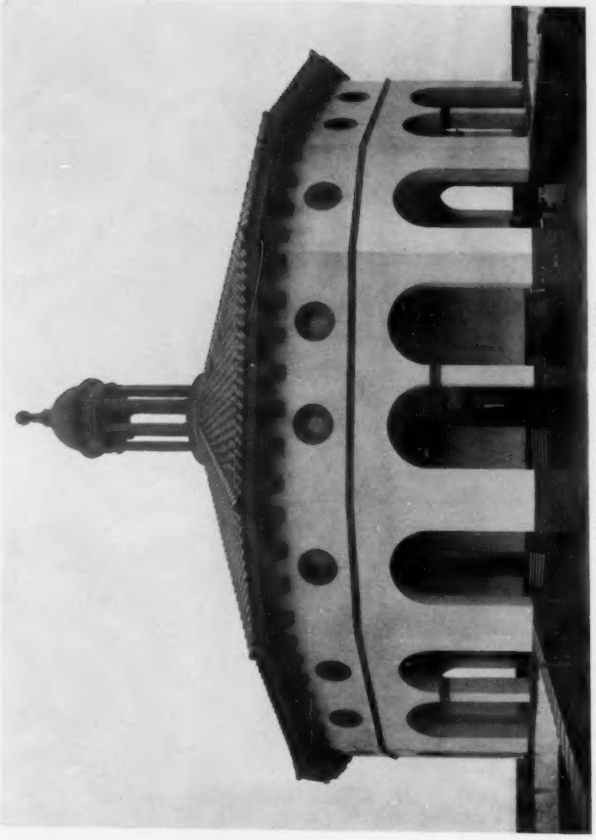


FOURTH FLOOR PLAN

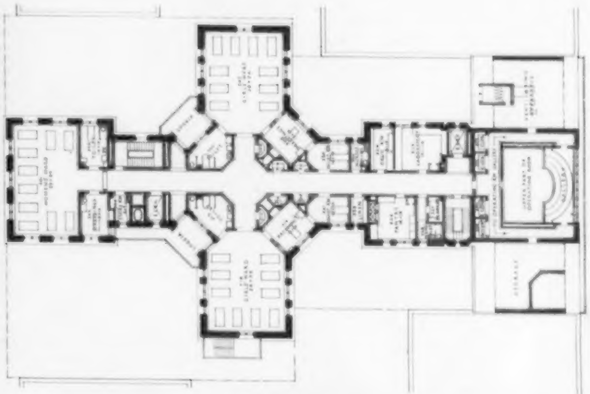
NEW YORK ORTHOPAEDIC DISPENSARY AND HOSPITAL, NEW YORK, N. Y.

YORK & SAWYER, ARCHITECTS

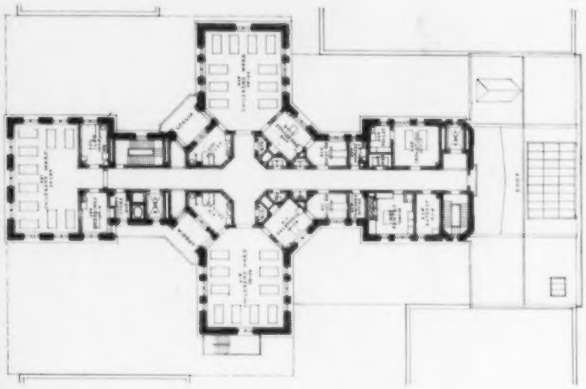
EAST 58TH STREET FACADE



VIEW OF LOGGIA ON ROOF



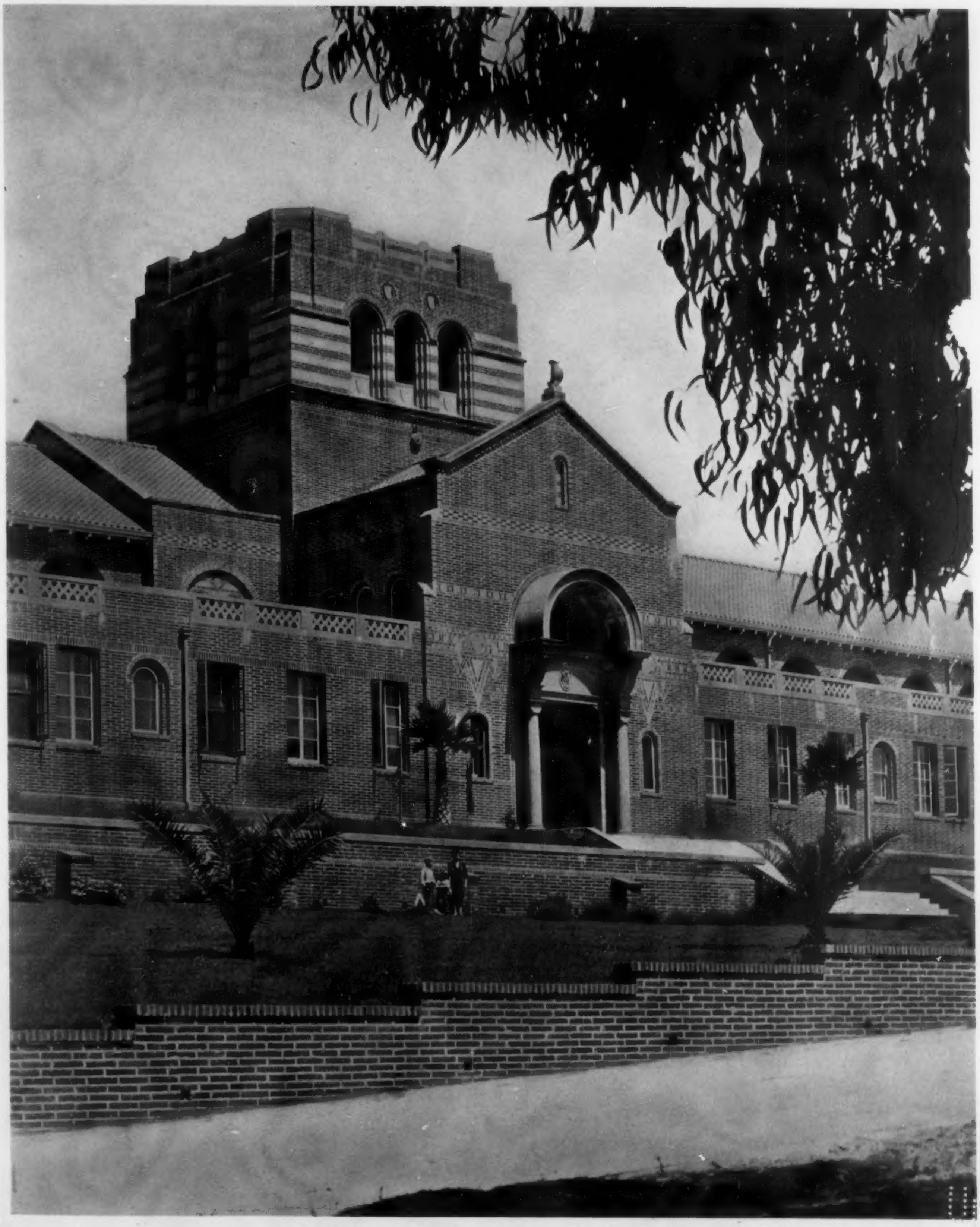
FIFTH FLOOR PLAN



SIXTH FLOOR PLAN

NEW YORK ORTHOPAEDIC DISPENSARY AND HOSPITAL, NEW YORK, N. Y.

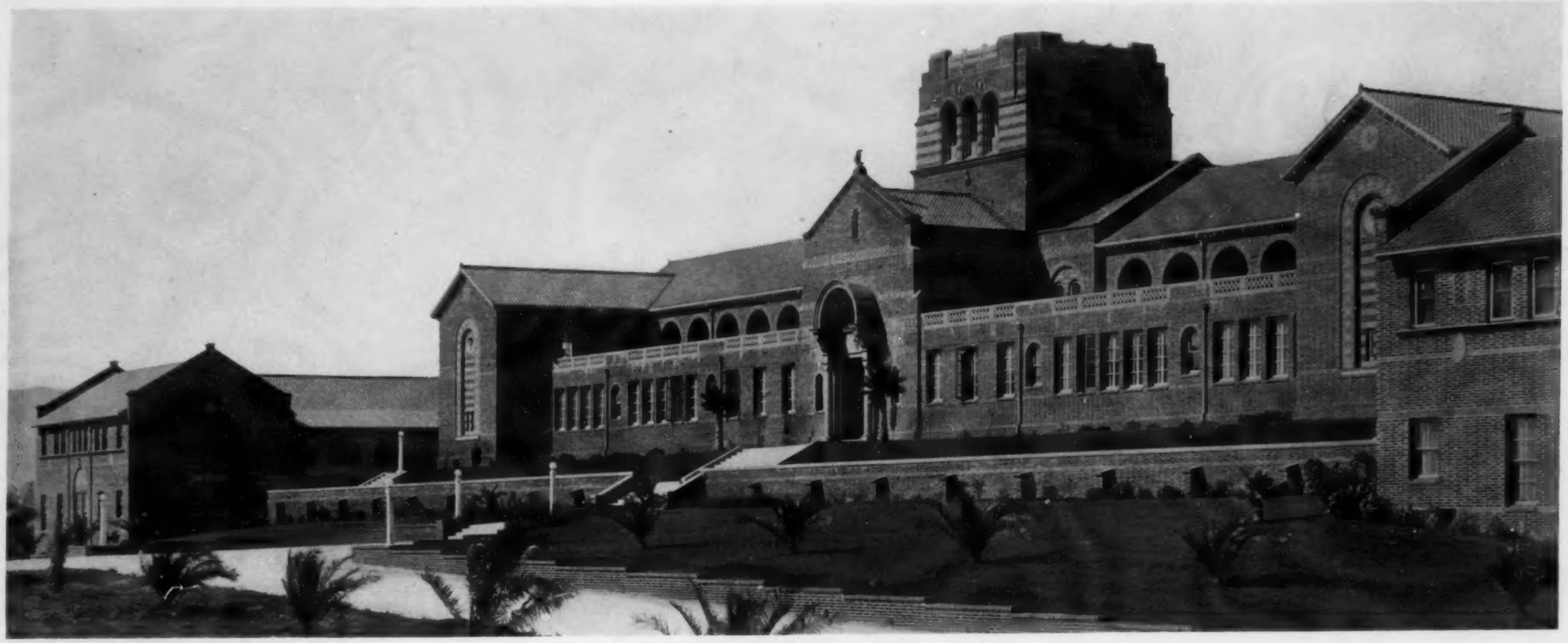
YORK & SAWYER, ARCHITECTS



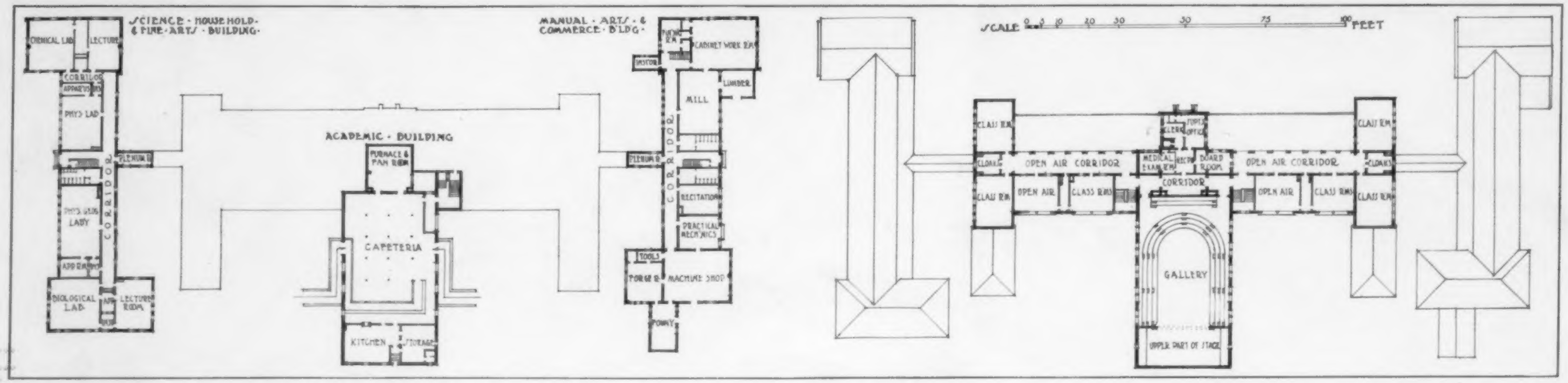
TOWER AND ENTRANCE PAVILION OF ACADEMIC BUILDING

HIGH SCHOOL GROUP, SANTA MONICA, CAL.

ALLISON & ALLISON, ARCHITECTS



GENERAL VIEW OF ACADEMIC AND MANUAL ARTS BUILDINGS

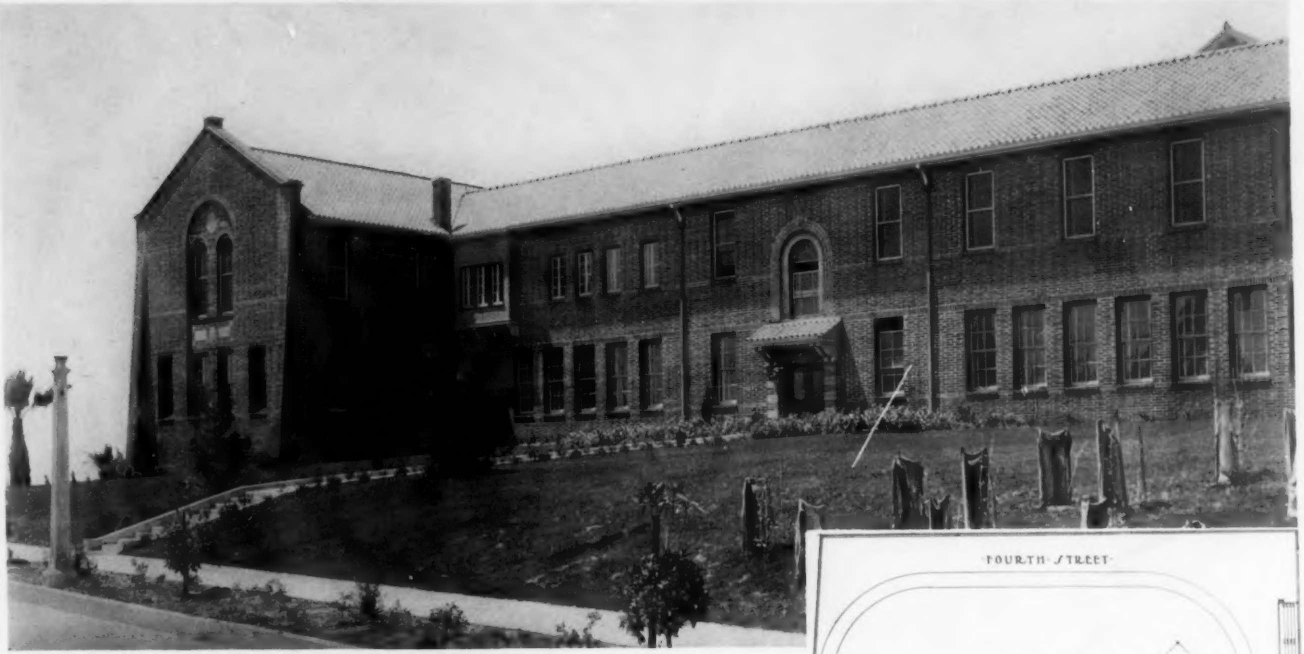


BASEMENT FLOOR PLAN

SECOND FLOOR PLAN

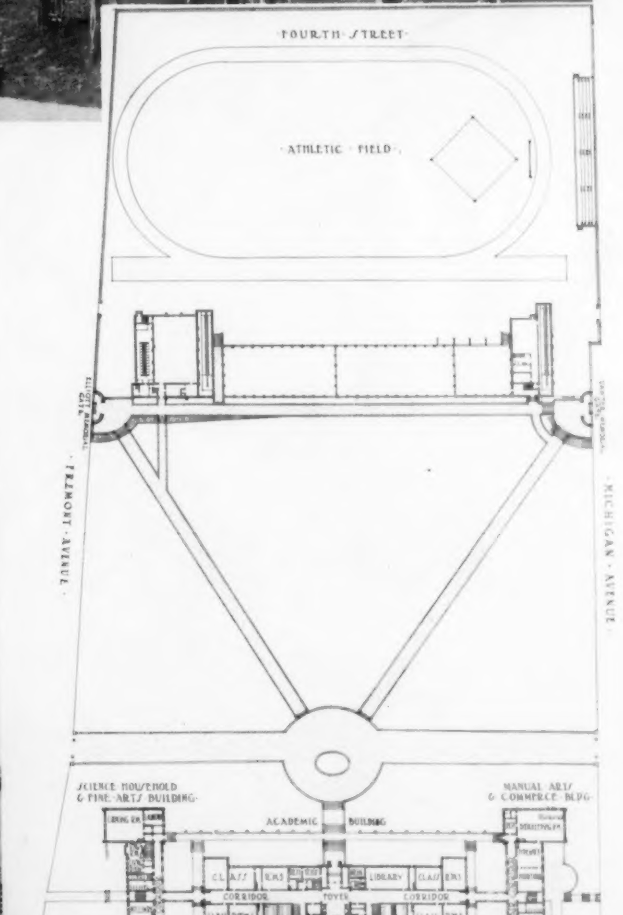
HIGH SCHOOL GROUP, SANTA MONICA, CAL.

ALLISON & ALLISON, ARCHITECTS



SCIENCE AND FINE ARTS BUILDING

DETAIL OF END PAVILION, ACADEMIC BUILDING



FIRST FLOOR AND PLOT PLANS

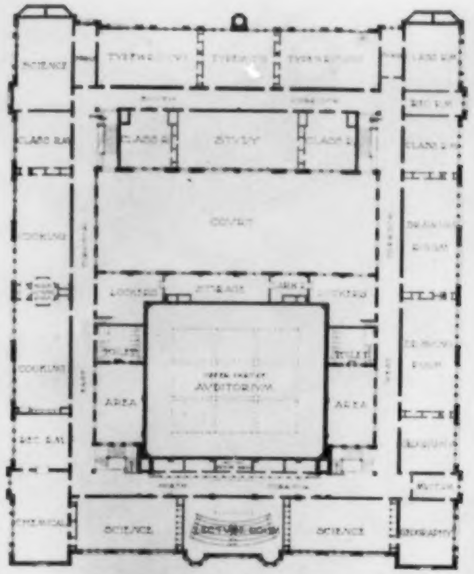
HIGH SCHOOL GROUP, SANTA MONICA, CAL.

ALLISON & ALLISON, ARCHITECTS

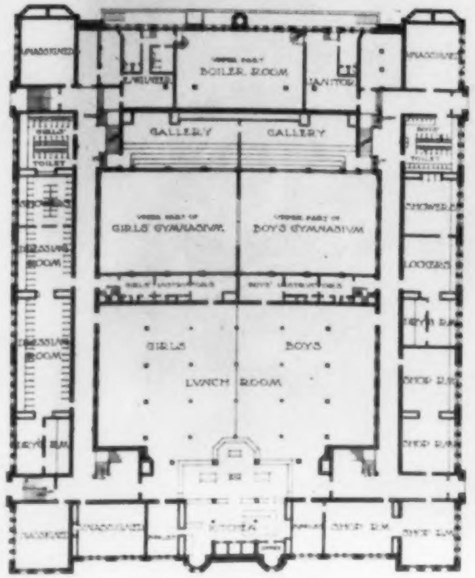
GENERAL VIEW OF PRINCIPAL FACADE

HIGH SCHOOL OF COMMERCE, SPRINGFIELD, MASS.

KIRKHAM & PARLETT, ARCHITECTS

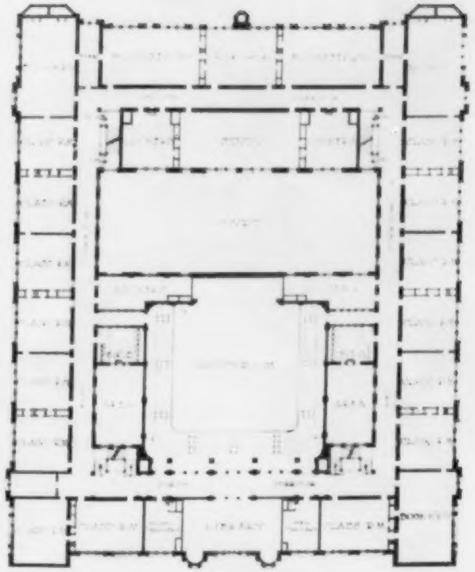


SECOND FLOOR PLAN

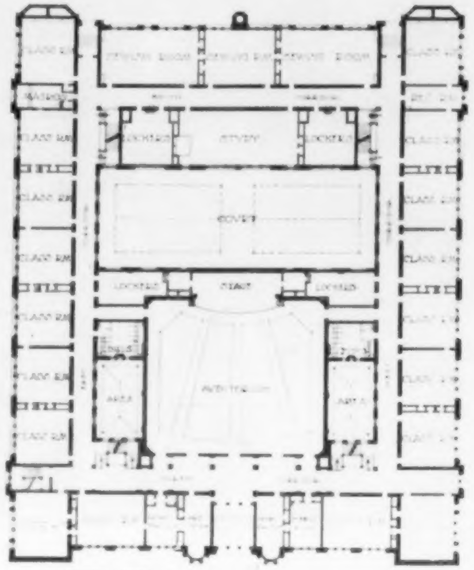


BASEMENT FLOOR PLAN

DETAIL OF ENTRANCE PAVILION



THIRD FLOOR PLAN



FIRST FLOOR PLAN

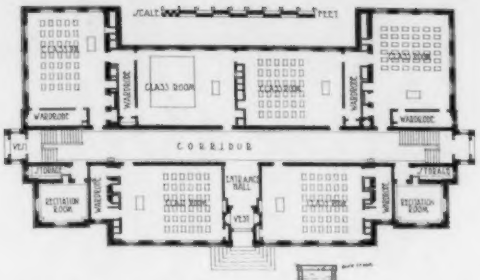
HIGH SCHOOL OF COMMERCE, SPRINGFIELD, MASS.

KIRKHAM & PARLETT, ARCHITECTS

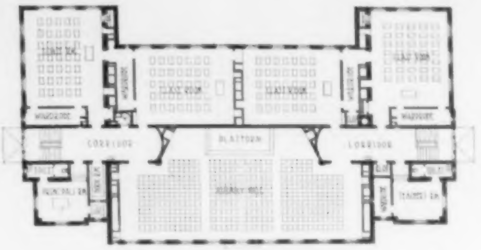
GENERAL VIEW OF PRINCIPAL FACADE

GRADE SCHOOLHOUSE, FRAMINGHAM, MASS.

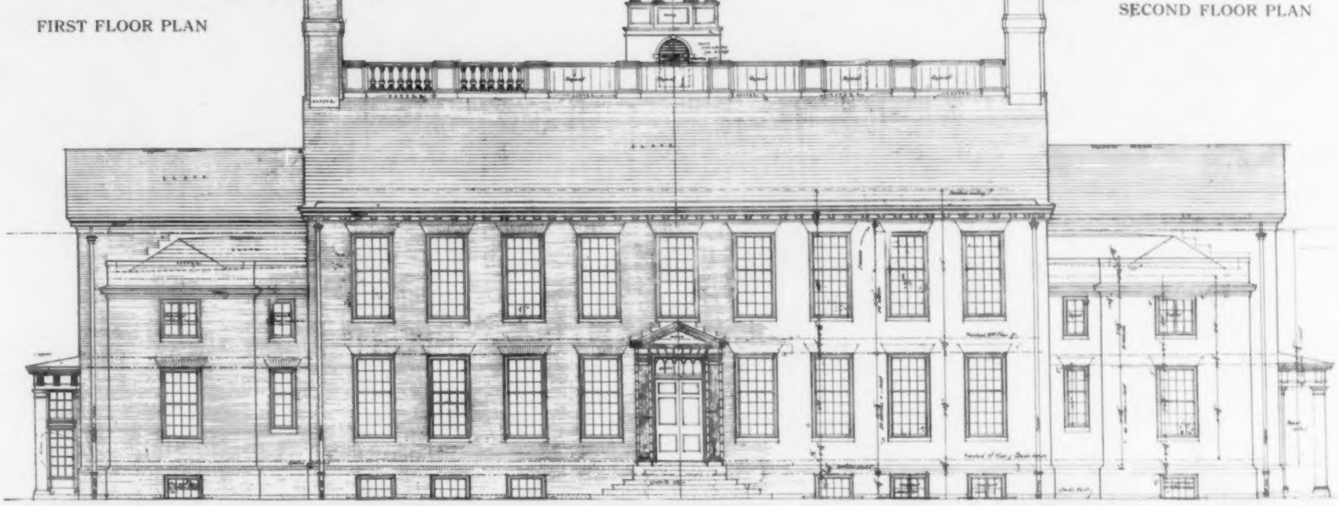
CHARLES M. BAKER, ARCHITECT



FIRST FLOOR PLAN

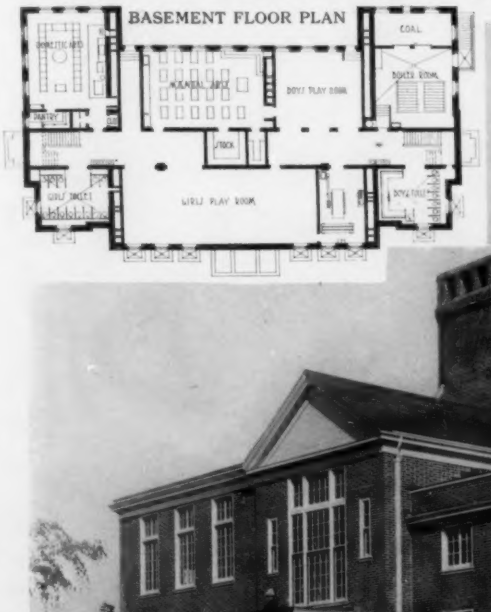


SECOND FLOOR PLAN



FRONT ELEVATION

BASEMENT FLOOR PLAN



VIEW OF SIDE AND FRONT

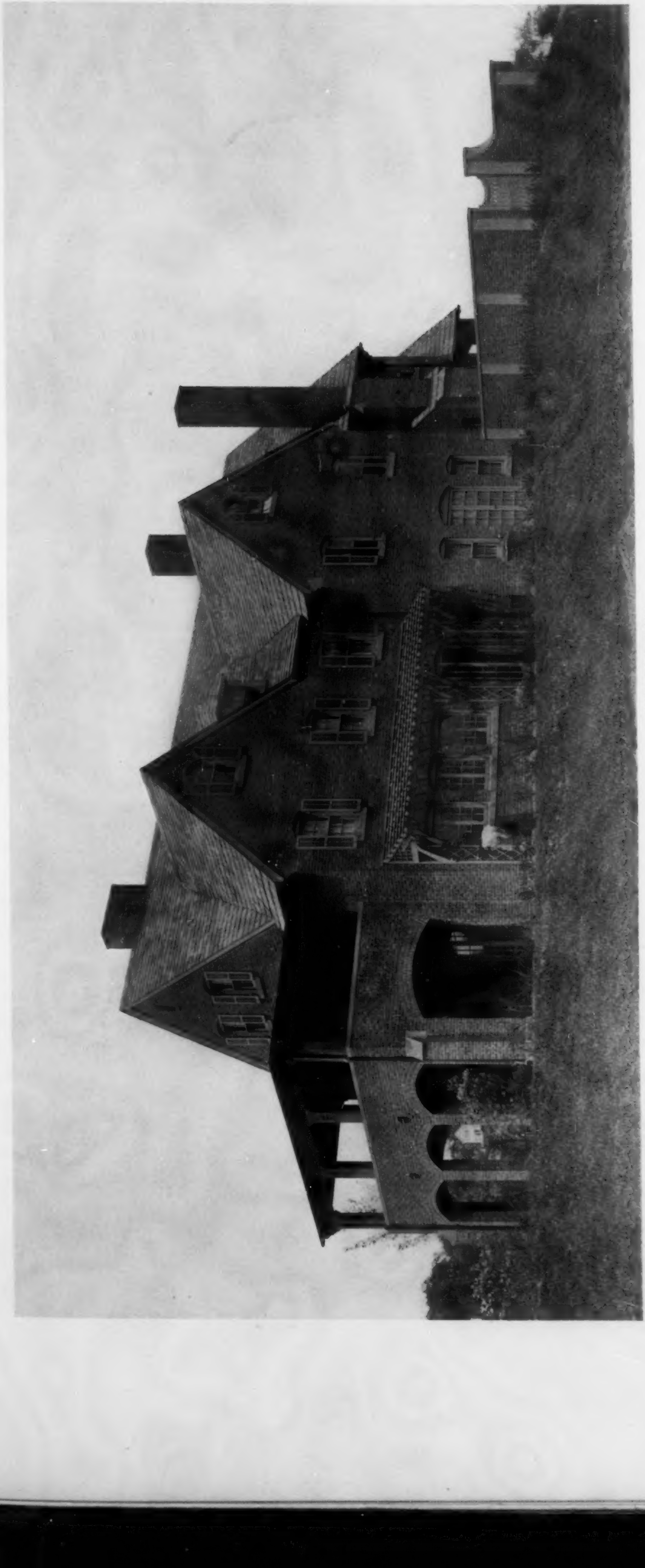
GRADE SCHOOLHOUSE, FRAMINGHAM, MASS.

CHARLES M. BAKER, ARCHITECT

ENTRANCE FRONT

HOUSE OF C. A. GOODWIN, ESQ., HARTFORD, CONN.

LA FARGE & MORRIS, ARCHITECTS



GARDEN FRONT

FIRST FLOOR PLAN

SECOND FLOOR PLAN

THIRD FLOOR PLAN

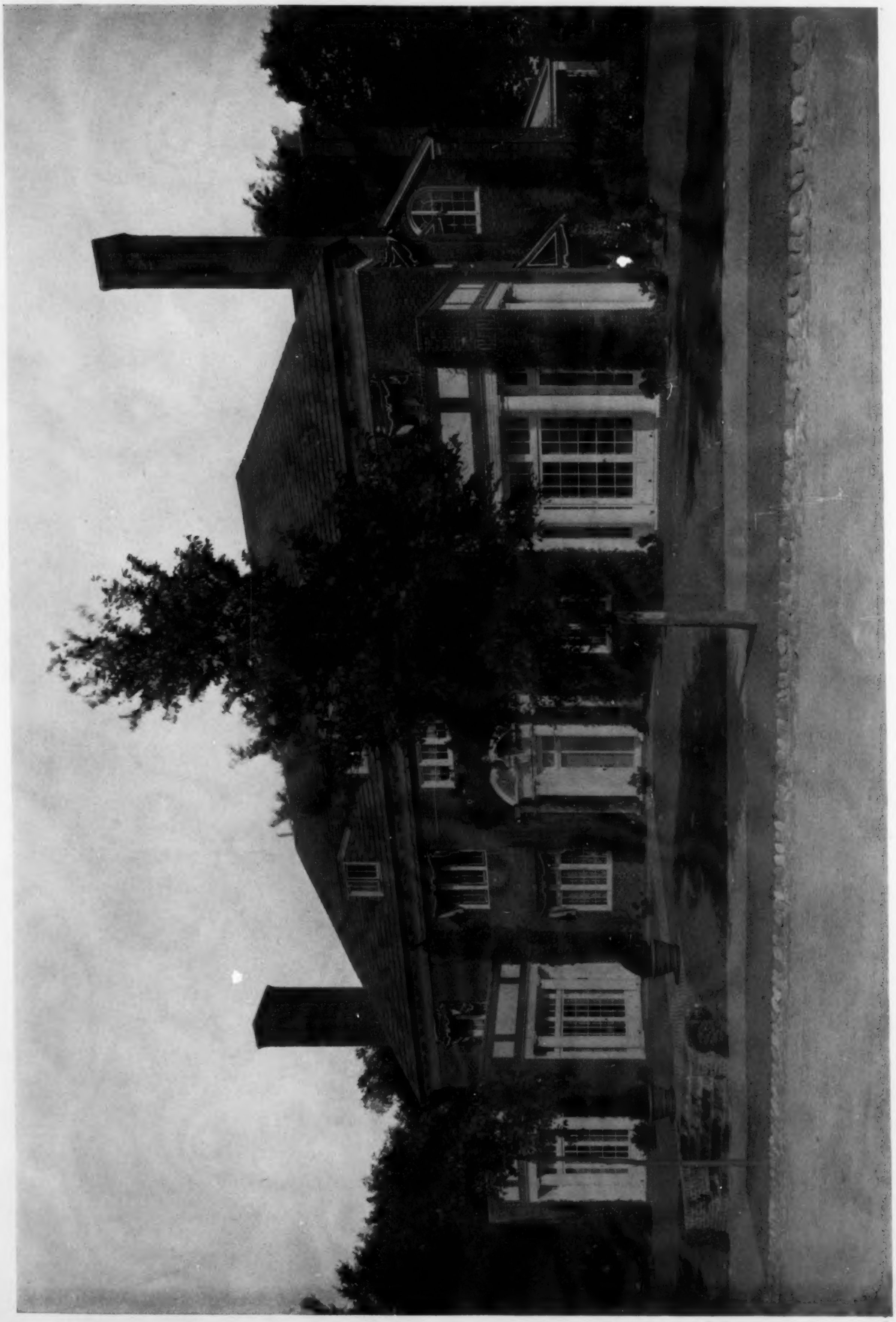
HOUSE OF C. A. GOODWIN, ESQ., HARTFORD, CONN.

LA FARGE & MORRIS, ARCHITECTS

DETAIL OF DOORWAY

HOUSE OF DANIEL ENGLAND, ESQ., PITTSFIELD, MASS.

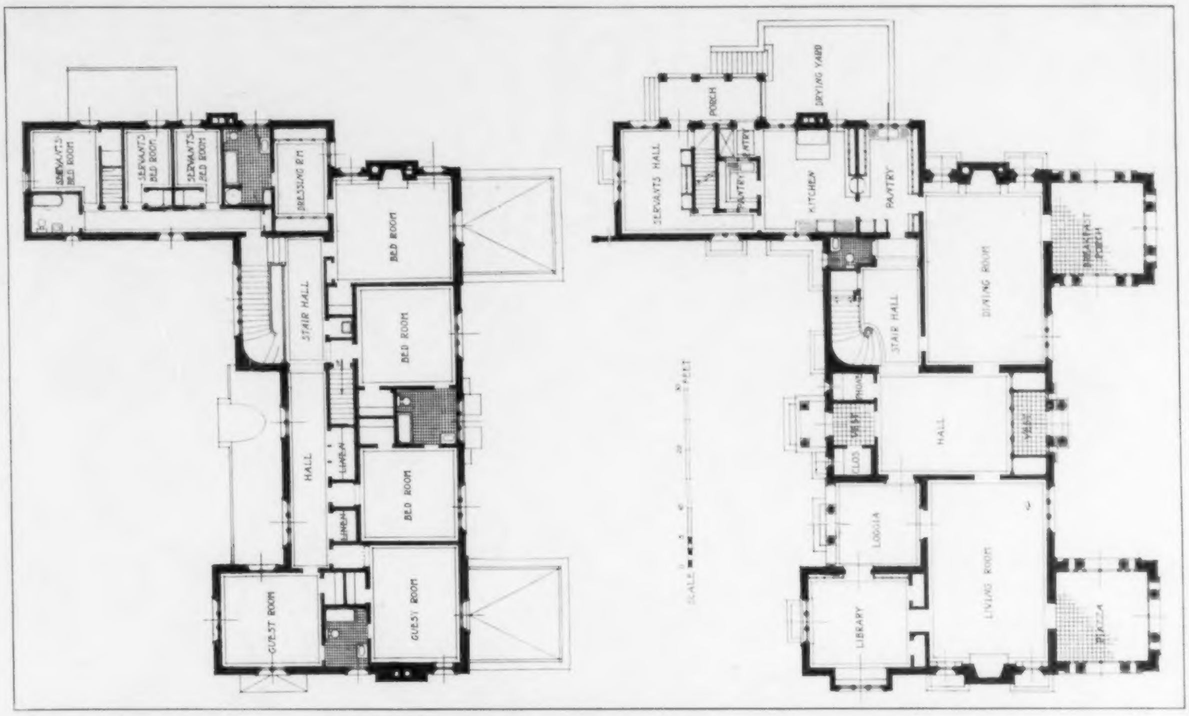
ALBRO & LINDEBERG, ARCHITECTS



STREET FACADE

HOUSE OF DANIEL ENGLAND, ESQ., PITTSFIELD, MASS.

ALBRO & LINDEBERG, ARCHITECTS



FIRST FLOOR PLAN

DETAIL OF MANTEL IN DINING ROOM

HOUSE OF DANIEL ENGLAND, ESQ., PITTSFIELD, MASS.

ALBRO & LINDEBERG, ARCHITECTS

THE BRICKBVILDER COLLECTION OF
EARLY AMERICAN ARCHITECTURAL DETAILS.

PLATE SEVENTEEN.

A GREAT deal of the charm of the architecture of early New England was obtained by very simple means — a judicious use of carved wood or composition ornament, well designed mouldings, and a fine sense of scale and proportion. It is this simple, dignified character which the modern architect so highly appreciates, yet it is the most difficult quality to reproduce in modern work.

The mantel shown above is composed of simple elements, yet it has the same mark of distinction that is seen in the most elaborate of the examples of Samuel McIntire's work which are preserved. The interest centers about the frieze, which is ornamented by a series of grooves and applied composition ornament on the plain surfaces. The same motive is carried out in the room cornice, bringing the mantel into intimate relations with the whole room. The single bead which finishes the wood fascia against the cement facing is worthy of note, for it is much more effective than any strongly defined moulding could ever be. The mantel shelf unfortunately has a heavier appearance than when it was built, owing to the addition of another member to give more shelf room.

In a room in this house now used as a kitchen, but formerly a dining room, there is a very interesting cornice and dado treatment, details of which are given on the following page. They are built of wood and the decoration is effected by grooving, reeding and other simple forms of carving.

CHAMBER MANTEL, CROWNINSHIELD, DEVEREUX HOUSE, SALEM, MASS.

Built in 1805.

MEASURED DRAWING ON FOLLOWING PAGE.

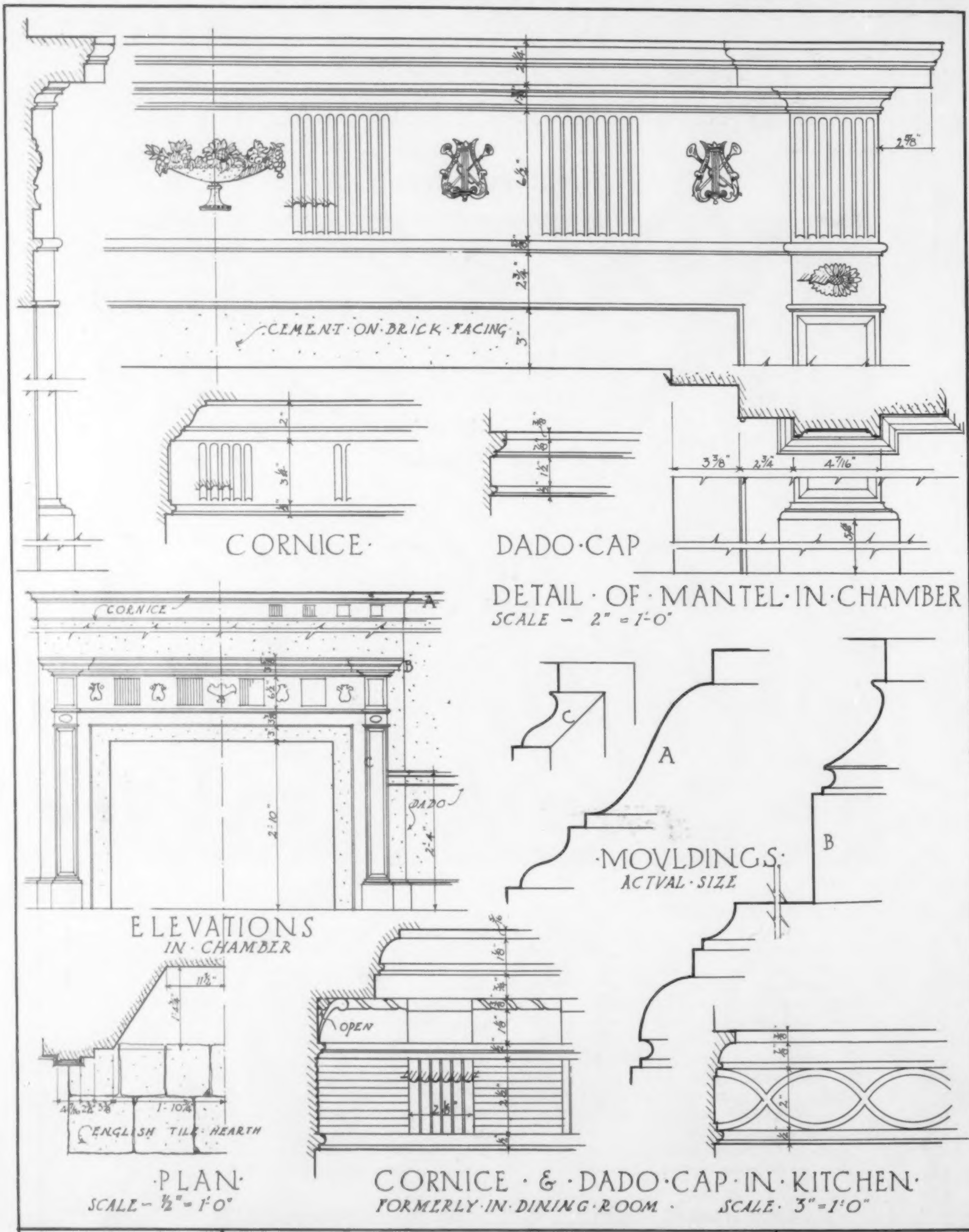


PLATE 17 MARCH·1916	DETAILS · FROM · CROWNINSHIELD- DEVEREUX·HOUSE – SALEM·MASS SAMUEL·McINTIRE·ARCHITECT· DATE·1805	MEASVRED·&· DRAWN·BY· GORDON·ROBB

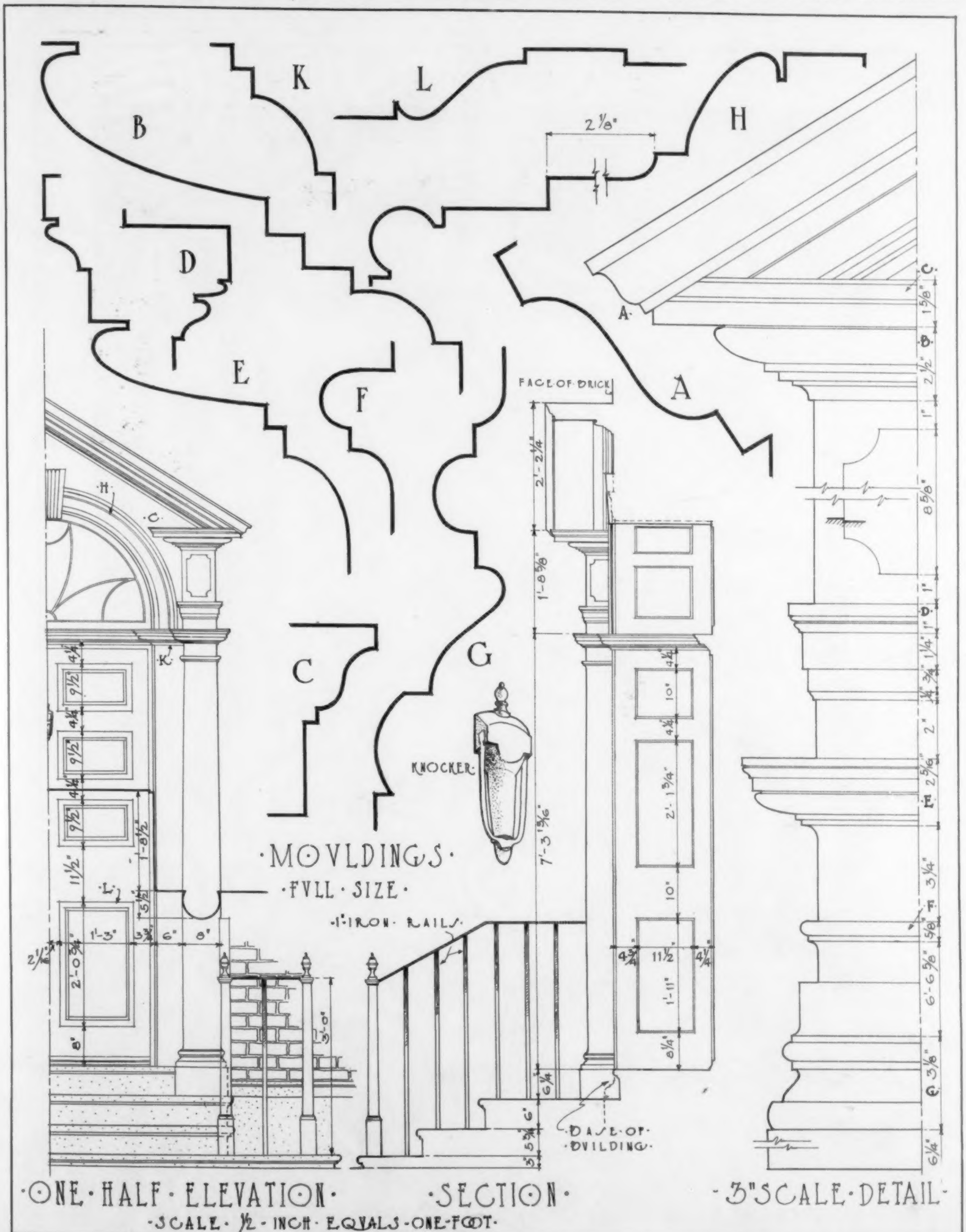
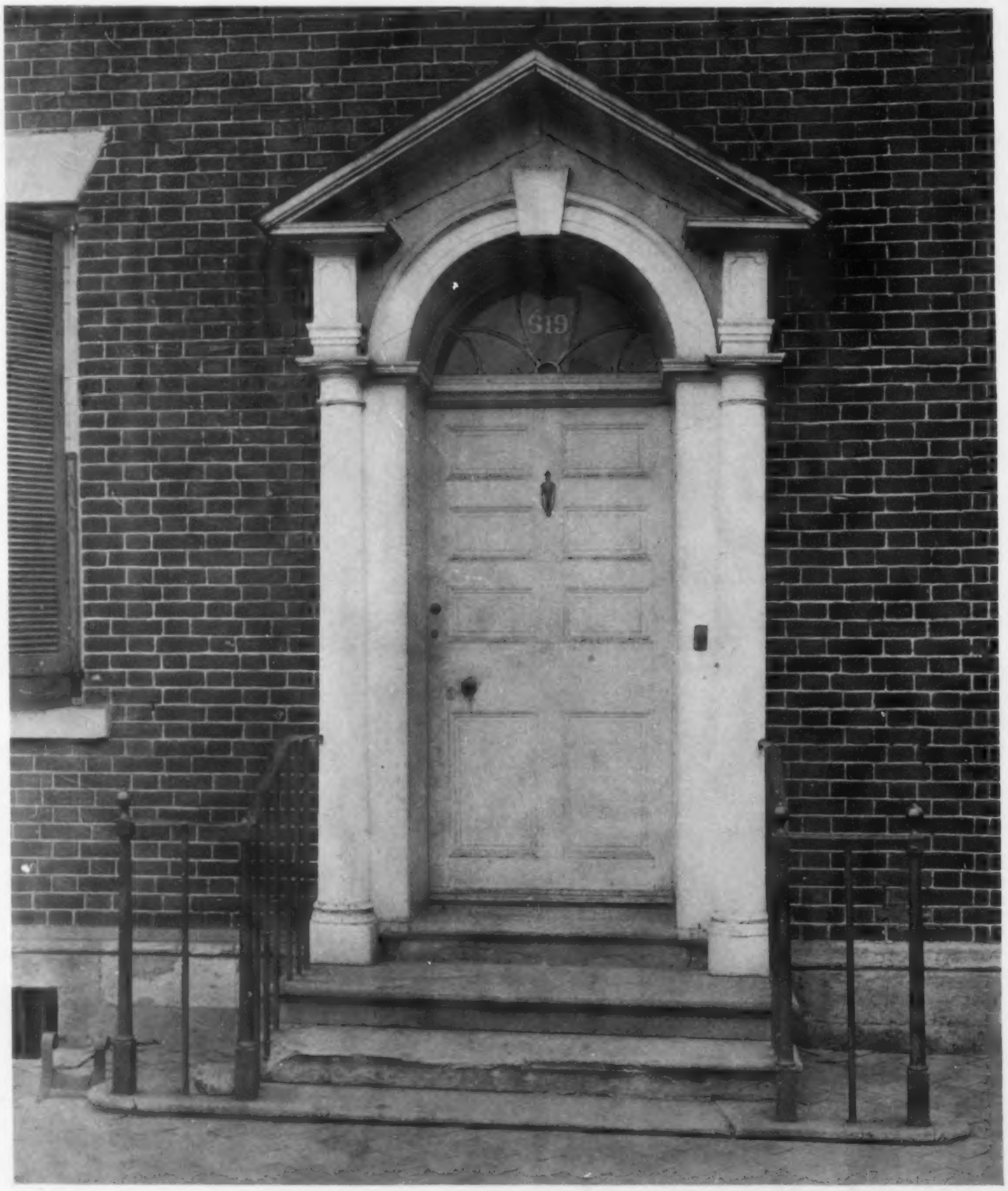


PLATE 18 MARCH 1916	·DOORWAY ~ SNOWDEN·HOVSE· ·ALEXANDRIA·VA· ·DATE·1790· ·BVILT·BY·THOS·VOWEL·	·MEASVRED·&·DRAWN·BY· ·J·L·KEISTER···O·J· MVNSON·&·J·A·WEBER

PLATE EIGHTEEN.



THIS quaint doorway of excellent proportions presents very original details with its wide projecting yet thin cornice, the deep frieze, and stunted architrave. The arrangement and shape of the panels of the door are both unique and pleasing. The arched doorway and the columns and pediment are brought into close relation by the moulded course just above the door, which is a continuation of the mouldings forming the column capitals. The leaded fan light has an unusual and interesting pattern.

The paneling of the door jambs which follows the main divisions of the door is flush with the rails and defined by a single bead.

DOORWAY, SNOWDEN HOUSE, SOUTH LEE STREET, ALEXANDRIA, VA.

Built in 1790.

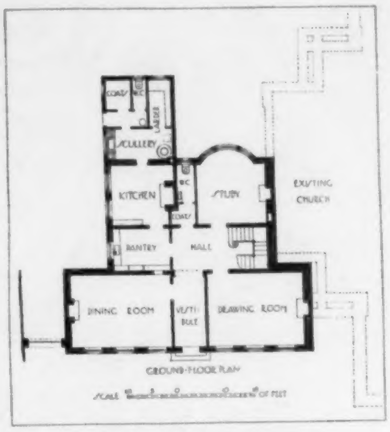
MEASURED DRAWING ON PRECEDING PAGE.

An English Housing Scheme.

DUCHY OF CORNWALL ESTATE AT KENNINGTON, LONDON; ADSHEAD & RAMSEY, ARCHITECTS.

By R. RANDAL PHILLIPS.

FROM the architectural point of view there has been in England more than enough discussion of housing practices during recent years. Not that too much attention can ever be directed to the solution of one of the greatest problems of the present day; not that continued discussion of housing topics is fruitless; but because there has been a superabundance of general talk about housing, so mixed up with ethics, morals, and a hundred other things that the real matter of the houses themselves has been very largely swamped; and when an attempt has been made to give architectural expression to the varied fancies and whims of housing enthusiasts, the result has generally been indifferent. Moreover, so much attention has been directed in England to housing schemes on semi-rural lines, that the equally important subject of urban housing has been left in the hands of borough engineers and similar municipal officials, whose architectural capacity is not of a high order.



Plan of St. Anselm's Vicarage

Being concerned in this article with a town housing scheme, we may pass all that belongs to the "garden city" with the brief remark that its ideals, and the buildings in which these ideals are expressed, must necessarily differ so acutely from the scheme for an urban area as to be apart altogether from consideration in connection with the latter. The "garden city" ideal, for instance, counts it necessary, or at least extremely desirable, that every house shall stand within its own plot of ground, with a strip of garden in front or at the back, or both, where a taste for country life can be indulged. All that is impossible in the midst of a town where the communal garden is the best that can be obtained. As has been said, there are only two ways of housing people, — either by spreading them out thin, or by piling them on top of one another; in other words, you can put them into cottages covering a large area, or you can put them into tenements. In the case of the houses on the Duchy of Cornwall Estate at Kennington, London, S. E., built for the Prince of Wales, as Duke of Cornwall, the former alternative has been adopted; and any one who will study what has been done on this estate will recognize not only the architectural quality that has been given to quite simple little buildings, but also the proper town system on which the estate has been developed. Kennington to-day is a

St. Anselm's Vicarage, Kennington, London, S. E.

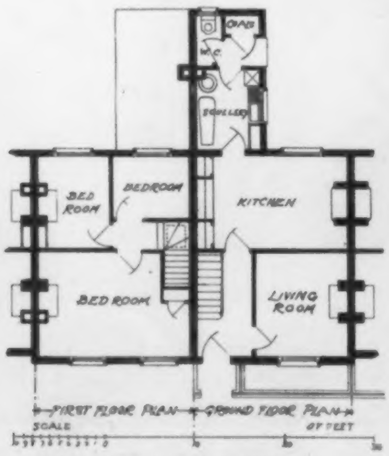
Adshead & Ramsey, Architects

General View of Workingmen's Houses on Courtenay Square, Kennington

poor quarter of London, though, like many another part, it was once esteemed as a very respectable residential district; but, as Swift makes Nevermont say in his "Polite Conversation", "Why, Sir John, London has gone out of town since you saw it." London is forever going out of town, and that is the explanation for the drop in social status which certain districts have experienced.

Whatever may be the merits of housing outside the confines of the town, it is yet the fact that large numbers of people are bound to live close to their work; and such people have not the time to spend in making what may be quite a journey night and morning. In these circumstances it becomes necessary to provide them with suitable housing in the midst of the town where they are occupied. At the same time it is necessary to remember that there are many people to whom the lure of the country means little, who prefer rather to live a town life — in which connection we may note, in passing, that the Parisians are a far greater town-loving people than Londoners are. Now the problem is to provide these people with suitable housing accommodation. The tenement is certainly not the ideal arrangement; the tenement, in fact, is generally a forbidding place, where all sense of individuality is swallowed up in a dull block of brickwork. On the Duchy of Cornwall Estate at Kennington there is no such thing as a tenement. Instead, we find pleasant little streets and squares, spick and span in appearance, all forming part of a general scheme, yet all and each marked by a touch of individuality and variety which gives a lively air to the whole district. The architects, Messrs. Adshead & Ramsey, have not attempted to do anything startling in the way of architectural design. We are not affronted by what may be called "queer" architecture. They have had to pull down a large area of old houses dating from the end of the eighteenth century and the beginning of the nineteenth century, and with rare perception and remarkable ability they have translated into their own new houses the spirit of the old. It requires a clear mind to do this. The temptation to make individuality predominant is so strong that most architects are unable to resist it. No such mistake has been made at

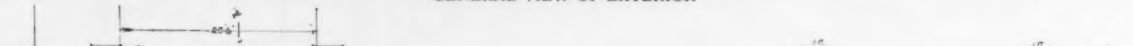
Detail of Workingmen's Houses on Courtenay Street



Plan of Workingmen's Houses on Courtenay Square

Detail of Workingmen's Houses on Courtenay Square

GENERAL VIEW OF EXTERIOR



GROUP OF MIDDLE CLASS FLATS, CHESTER STREET, KENNINGTON, LONDON, S. E.

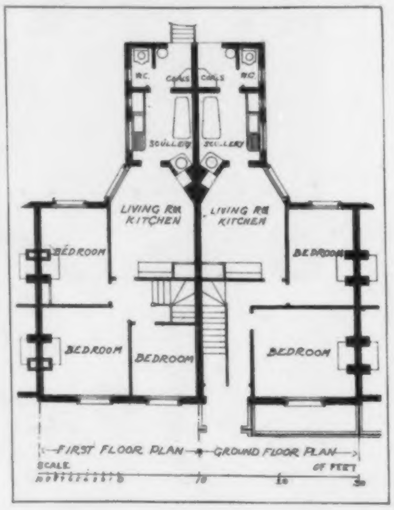
ADSHEAD & RAMSEY, ARCHITECTS

Pair of Single Family Houses on Courtenay Street

Kennington. There are streets of houses, squares of houses, two story cottages, flats for workmen, flats for middle class tenants, a hostel for old people, a *crèche* where babies can be left by mothers who have to go out to a day's work, shops, a church; and while all these are treated differently, and have an essentially modern air, they are all part and parcel of one common style of design, and so possess the merit which belongs to every harmonious scheme. As Professor Abercrombie has pointed out, instead of ransacking Holland or facsimiling Cheshire "black-and-white" the architects have dared to dispense with travel sketches and to hide their store of exotic architectural whimsies.

"A couple of houses in this quiet London manner may not be noticeable; it is only in extended use that its fitness and charm become apparent. It is, therefore, doubly fortunate that the Kennington estate provides a sufficiently continuous quantity for its qualities to be rightly appreciated. The more emphatic treatment of eaves and roll tiles lends a distinctive character to the Vicarage and the Old Tenants' Hostel that, without symbolical laboring, appears subtly suitable; delicate balconies, enriched panels, balustraded parapets, and columnar porches give the flats an air of refinement that wholly dissociates them from the necessitous tenement; the trellis porch, interlaced bars, and a squat proportion produce in the new square the homely aspect of the Englishman's own house. The way these differentiating characteristics have been seized upon by the authors, and, within the frame of a harmonious style, worked so as to express the inner significance of these buildings, promises well for the further use of this medium. Again, within the same type — as, for example, the flats, of which several blocks have been erected — there is scope for endless variety of surface treatment, in the judicious disposal of bands and panels, by which an individual interest is given to blocks of similar outline form. And what is particularly notable is the way in which the architects have combined refinement and delicacy of detail with an absence of frigid scholarship. The entrance to the Old Tenants' Hostel is exactly where a lesser hand might have gone wrong: an archway 13 feet high, flanked by Ionic pilasters — what a chance here for pulling out the full diapason of the neo-Grec organ, and how incongruous it would have

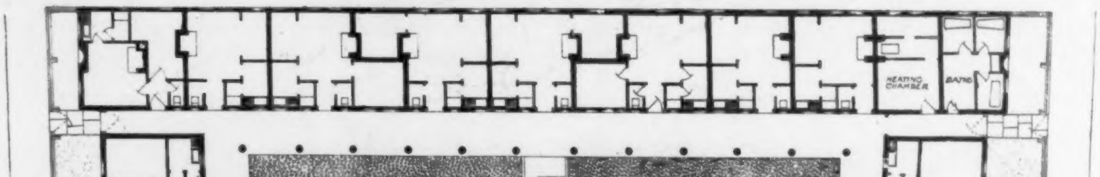
Two-Family Flat on Newburn Street



Floor Plans of Two-Family Flats

Flats at Entrance to Courtenay Street, Kennington

EXTERIOR VIEW SHOWING GROCER'S SHOP AT CORNER



OLD TENANTS' HOSTEL, KENNINGTON, LONDON, S. E.
ADSHEAD & RAMSEY, ARCHITECTS

been to the old people whose front door it is! Instead, combined with a certain largeness and breadth, reflecting its royal founder, there is a homely quality, obtained by the effortless grouping of overhanging wood cornice, cupola, bell, and weather-vane. Such architectural self-restraint is rare in these self-conscious days. . . . The importance and significance of the Kennington estate is thus twofold; it is the first example of urban housing carried out on town planning lines and conceived in no apologetic mood, as though it were a makeshift caused by the difficulty of carrying people out to the suburbs. No, this is frankly a group of town houses for town dwellers, and sets up a standard of its own, quite distinct from that of the suburb. The extent of the area dealt with, and the radical rearrangement in the proportion of built-on land to open space which is being effected in the site planning, lift this work above the piecemeal rebuilding of street blocks, which is always taking place to a greater or lesser extent. The other reason of its importance is that it is artistically sound. That this should be achieved at the outset is indeed fortunate. We know how usual is the early fumbling of a new departure — the garden suburb is only now beginning to find its permanent idiom after endless experiments. At Kennington, a satisfactory result has been obtained by the close study of a local tradition and usage which, carefully modified to suit modern requirements, was admirably adapted to its present purpose."

Entrance to Court, Old Tenants' Hostel

There is no need to go into any detailed description of the houses, for the accompanying illustrations speak for themselves. It may be stated very briefly, therefore, that they are all of brick, with artificial stone dressings, and have, for the most part, flat roofs, constructed of a waterproof material covered with gravel. All have electric light (which up to a certain consumption is included in the rent) and all have baths.

View in Court of Old Tenants' Hostel, Looking from Entrance Archway

The Ventilation of Special Rooms.

By CHARLES L. HUBBARD.

IN any general consideration of ventilation it is not possible to take into account individual rooms which, by reason of peculiar conditions, demand special equipment. In this article a number of these rooms, which vary from the usual type, are discussed and their special requirements, together with the generally accepted means of meeting them, are given special, though brief, treatment.

Toilet Rooms. The older method of ventilating toilet rooms was by open windows or by means of general room ventilation through wall or ceiling registers connecting with flues leading outward. Later, the local vent came into use and has been considered the most effective method yet devised, especially when connected with a flue having a strong draft to insure constant circulation.

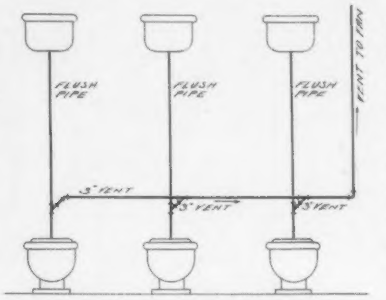


Fig. 1. Showing Use of Local Vents

Until recently the result sought has been the removal of odors before they had a chance to spread throughout the air of the room, and all efforts have been directed along this line. Within the last year or two special attention has been given to what constitutes the real danger from a poorly ventilated toilet. It seems to be a well established fact that the odor from excreta and gases is harmless, although unpleasant, and the real danger lies in the excretions themselves, especially if they are allowed to dry and take the form of dust.

While the usual method of ventilation through openings or horns attached to the closet may be effective in the removal of odors, it is not always a safeguard against the spreading of dangerous germs which may be contained in the substances passing to the sewer through the closet. As a matter of fact, the usual design of closet with its local vent opening may, in certain cases, catch and hold small portions of the excreta which may spatter into it, and later discharge them into the surrounding atmosphere in the form of dust, together with any harmful germs which they may contain. In order to be perfectly safe, a local vent opening must be so placed as to make it absolutely impossible for anything to spatter into it from the closet, and this with the usual form is often a difficult thing to do. One suggestion is to make the lower portion of the flush pipe serve as a local vent also, by enlarging it and connecting it with a fan suction as shown in Fig. 1. With this arrangement the opening into the closet is kept clean through frequent flushings, and, in any case, matter which may stick to the walls of the vent opening has no opportunity to dry and turn into dust.

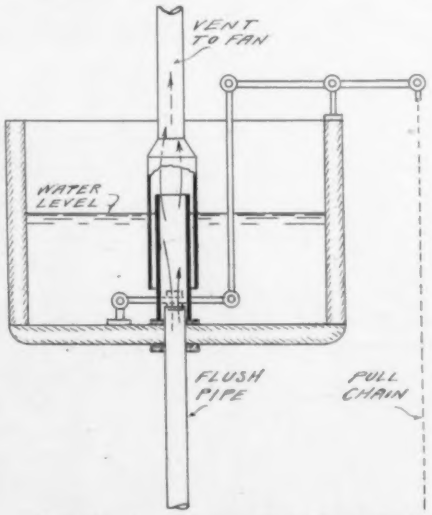


Fig. 2. Showing Vent from Flush Pipe in Tank

An arrangement adapted to another form of flush valve is shown in Fig. 2, in which a water sealed cap is placed over the top of the flush pipe in the tank.

A safe and often satisfactory way is to omit the horn or local vent from the closet and provide a small vent register just above the seat, as shown in Fig. 3. In this case it is entirely separate and cannot possibly pick up any dust from the interior of the closet, and a strong draft created by a fan should readily dispose of any odors which may find their way into the room. In addition to these wall vents it is well to place one or more registers in the ceiling to catch any foul air which may pass them.

Theoretically, the greater part of the ventilation from a toilet room should be through the fixtures in order to remove the odors at their source, before mixing with the air of the room. An examination, however, of a number of installations without local venting seems to indicate that it is practicable to maintain a good degree of air purity by means of wall and ceiling vents alone, provided a sufficient volume of air is handled to keep the currents moving in the right direction.

This may easily be done in the case of schools, factories and other buildings, where the toilets are used by a large number of people, by the use of an exhaust fan of sufficient size to provide a complete air change once in six or seven minutes. The common practice of providing a closed chamber at the rear of the fixtures for concealing the connections and serving as a common collecting chamber for the local vents is ideal, in a way, for the removal of odors; but it is also ideal for collecting and retaining any germ-bearing dust which may form in the vent outlets from the closets. Like all theories, the above may be carried to extremes far beyond those necessary for reasonable safety; but it is well to consider the possibilities noted and plan the ventilating system in such a manner as to eliminate them so far as possible.

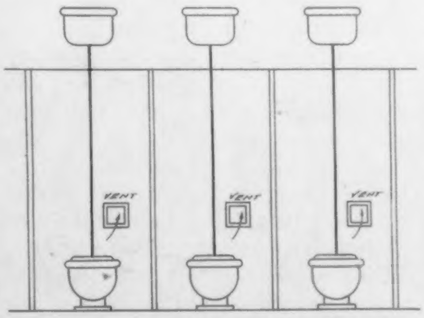


Fig. 3. Showing Independent Vent Registers

Locker Rooms. Closely connected with the toilets of a school, shop, or gymnasium are the locker rooms. Although clothing may contain harmful germs in certain cases, they are not likely to be carried by air currents passing over them at moderate velocities. In this case the best results are obtained by local ventilation, either by means of a fan or under gravity circulation. A common arrangement is shown in Fig. 4, which may be improved in certain cases by running a couple of lines of steam pipe through the lower part of the lockers below the clothing for use in rainy weather when the lockers may contain wet garments.

In many cases, room ventilation alone is depended upon for work of this kind, but the arrangements described are more effective in rooms containing a large number of lockers.

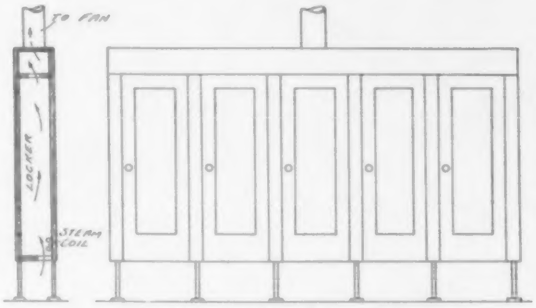


Fig. 4. Method of Ventilating Lockers

Here, as in the case of toilet ventilation, a fan is to be preferred to natural draft, as there is considerable resistance to air flow, and an even velocity through the entire system of lockers is best secured by carrying a fairly strong suction on the main discharge duct and regulating the flow from each locker, or each series of lockers, by means of an adjusting damper. For a comparatively small number of lockers a heated flue will usually provide sufficient draft for satisfactory results. With this arrangement larger ducts should be employed, as the velocity of flow will be considerably less than with a fan. The volume of air removed from a locker room should be about the same as from a toilet. In both cases the air supply is best drawn in through louver openings, or grilles, connecting with corridors or similar rooms, as it is desirable to maintain a slight vacuum within them in order to prevent any outward leakage which might carry odors to other parts of the building.

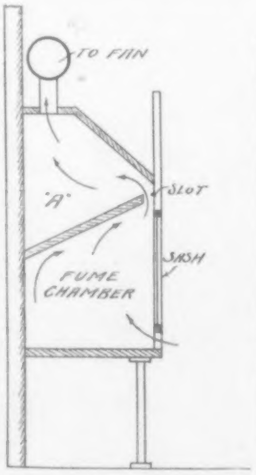


Fig. 5. A Type of Laboratory Hood Insuring Good Ventilation

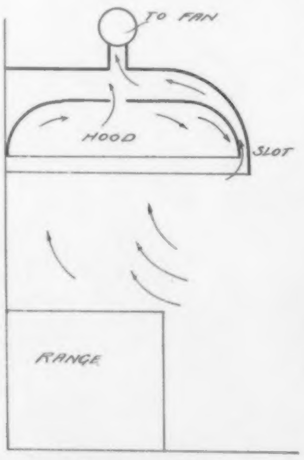


Fig. 6. Showing Method of Securing Local Ventilation Through a Range Hood

Chemistry Laboratories. These require special treatment owing to the fumes given off by various chemical processes. Work of this kind should always be done under a hood, a very efficient form of which is shown in section in Fig. 5.

This consists of a fume closet, with a porcelain or slate bottom, and a curved or slanting top, which deflects the gases to a narrow slot at the front, through which they are drawn at a comparatively high velocity by means of a fan connecting with the duct "A", which is common to all of the hoods in the same row. Each fume closet is provided with a sliding sash in front, which is left open for 2 or 3 inches when the closet is in use in order to provide an air supply sufficient to carry off the fumes. In general, the greater part of the room ventilation should be through the hoods, although wall registers are necessary, especially in school laboratories, for use at such times as the hoods may not be in service.

The demonstrator's desk or table should be provided with a strong down draft opening for carrying away fumes which may be generated during demonstrations before the class. A hood cannot be used in this case as it would obstruct the view too much. Fans for chemical ventilation should be constructed with copper blades or coated with a preparation which is impervious to the fumes given off in the hoods. The connecting ducts and flues should be coated on the inside with the same material or be constructed of tile.

Kitchen Ventilation. The kitchen should be furnished with a strong, outward ventilation to prevent the odor of cooking from reaching other parts of the building. The greater part of the ventilation should be local rather than general, in order to remove the odors as soon as generated. This applies to the range hood, vegetable steamers, coffee and tea urns, etc. Local ventilation, however, should be supplemented by sufficient general ventilation to remove the heated air from the upper part of the room when desired, the general ventilation to be controlled by dampers under the direct charge of someone employed in the room. The fresh air supply may usually be taken, in part at least, from adjacent rooms, such as serving room, servants' dining room, etc., making the discharge from the kitchen so strong that there will be no tendency to create back drafts. Cool outside air is best admitted near the ceiling, in front of the range and ovens, through inlets which may be made to discharge in any direction desired. Under ordinary conditions this air supply will not need to be warmed, there being sufficient heat in the upper part of the room to prevent uncomfortable down drafts. In large kitchens, where there is likely to be a considerable volume of air required in cold weather, it is well to provide a heater or coil in the supply duct to temper the air before admitting it to the room.

For small and medium size kitchens sufficient air will enter through the openings provided, if there is a good outward draft through the vents.

In very large hotel and restaurant kitchens it is usually necessary to furnish a supply fan, taking care that the air introduced in this manner does not exceed about 60 per cent of that exhausted. Efficient hood ventilation depends upon the removal of air at a high velocity through

a comparatively small opening, as has already been described in connection with chemistry laboratories. This condition may be secured in practice by constructing a hood as shown in Fig. 6, in which the air is drawn partly through a narrow slot about an inch in width, extending entirely around the perimeter, supplemented by one or more small openings in the top, as indicated in the diagram. This same general scheme should be carried out in the construction of hoods for other pieces of apparatus requiring local ventilation.

All ducts and flues beyond the range connections should be made fireproof on account of the inflammable coating formed on the inside from the vaporized oils which are given off in cooking. When constructed of metal it is best to use black iron as heavy as No. 12, and insulate the outside of the flue with a couple of inches of plastic material, in the same manner as a smoke pipe from a boiler is insulated. All discharge ventilation of this kind requires the use of a fan in order to secure the necessary air velocity. A fire damper, held open by a fusible link, should be provided that will shut off the flue automatically and at the same time stop the fan.

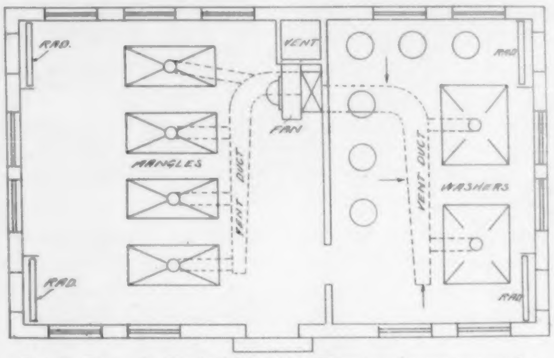


Fig. 7. Plan of a Typical Laundry, Showing Arrangement for Good Ventilation

A kitchen should be provided with sufficient air to produce from fifteen to eighteen changes per hour, if the room is less than 14 feet in height.

Dining Rooms. The dining room of a large hotel or restaurant should be provided with a positive air supply by means of a fan, either in connection with other rooms of the building or independently as is found most convenient. If the air is taken from the general ventilating system at a temperature of 70 degrees, heat must be supplied either by placing supplementary heaters at the bases of the flues or providing direct radiating surface in the rooms.

When the dining room is ventilated by a separate apparatus the entire heating may be done by the main heater at the fan, sending the air to the room at a temperature sufficiently high to offset the losses by transmission and leakage, thus simplifying the arrangement and doing away with a secondary or direct radiating surface.

Fig. 8. Vent to Outside at Floor Level of a Garage

In general, the air is best introduced at an elevation either in the window sills or through registers in the outer walls. When the system is used in the summer for cooling, separate inlets are sometimes provided near the floor which may be thrown into use by means of switch dampers. The reason for this is to avoid cool drafts from the falling air, which are likely to occur when cool air is introduced from above.

Exhaust ventilation should be partly at the floor and partly at the ceiling to give a slight upward current in case there is smoking in the room.

The air volume for a dining room should be based upon the maximum seating capacity, allowing, at least, 40 cubic feet per hour per occupant.

Bar and Smoking Rooms. The air flow from these rooms should be strongly outward to prevent smoke and the odor of wines and liquors from passing to other parts of the building.

This result is easily brought about by the use of direct, indirect radiators through which the outside air is drawn, due to the slight suction produced by the action of the exhaust fan. These radiators should be of sufficient size to warm the room in addition to meeting the ventilating requirements imposed upon them. Rooms of this type should have at least eight changes of air per hour.

Laundry. This is an important room in an institution or hotel and should receive careful attention in the matter of ventilation. As the air in a laundry contains a high percentage of moisture and is likely, at times, to become overheated, the conditions are such as to have a decidedly enervating effect upon the occupants unless the room is well ventilated. While open windows and roof ventilators may work satisfactorily in warm weather, the introduction of cold air will produce excessive condensation and also set up dangerous drafts.

The best results are obtained by removing the warm, moist air from the upper part of the room and admitting tempered air near the floor.

Air is best removed by means of an exhaust fan, and a considerable portion should be taken from hoods placed over washers and mangles. In addition to this there should be a certain amount of general or room ventilation through vent registers placed in the side of the main duct. Fresh air may be drawn in through shallow coils or radiators called induction heaters, which are placed either in front of windows or special openings.

The general arrangement of the ventilation for a laundry is shown in diagram in Fig. 7.

Garage. The two points to be considered in the heating and ventilation of a garage are the absence of fire and the removal of gasoline vapor through openings near the floor. In case of a private garage located near the main house, the simplest method is to carry underground pipes from the house boiler for supplying a radiator of sufficient size for heating the building. The only precaution in this case is to make tight joints where the pipes pass into both buildings, in order to prevent any possibility of inflammable gas working back into the basement of the main house.

When the garage is located at a considerable distance from the main house, or when a furnace system is employed, it will be necessary to provide a separate heating outfit. This may be either hot air, steam, or hot water, as

most convenient, the only particular requirement being that the stove or boiler be placed in a wing outside the garage proper, with a separate outside door and no communication with the main portion except for the pipes or flue leading from the heating plant.

Supply pipes and flues should pass through the partition 6 or 8 feet above the floor, and care should be taken to make all joints tight. Return pipes must necessarily be carried at a lower elevation; but by placing the radiator upon a shelf in the upper part of the room, the danger of gasoline fumes passing through the wall openings may be greatly reduced, as this gas is heavier than air and will fall to the lower part of the room below the returns.

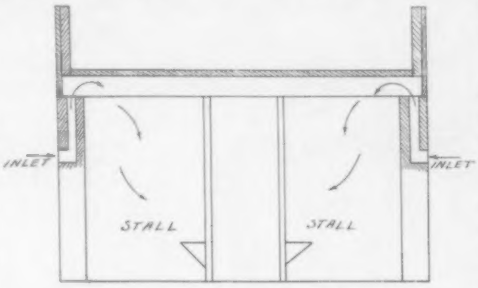


Fig. 9. Method of Ventilation Adapted to Low Stables

Vent openings, therefore, should be located at the floor, a common form being shown in section in Fig. 8.

Stable. Although the use of stables is not so common as formerly, there are many country estates where horses are kept and where suitable ventilation is necessary to secure the best results.

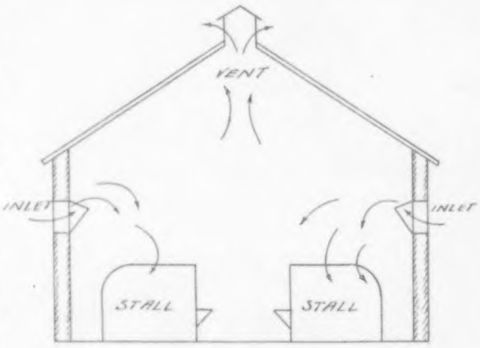


Fig. 10. Showing One Method of Stable Ventilation

Theoretically a cow or horse weighing 1,000 pounds requires about 4,000 cubic feet of fresh air per hour, but it is not possible to provide this without the use of special fans and heaters, which are hardly ever resorted to in practical work of this kind.

The difficulty experienced in stable ventilation is due to the fact that animal heat is relied upon for maintaining the proper temperature (35 to 45 degrees), and this necessarily limits the amount of fresh outside air which can be admitted in cold weather without injury to the stock.

Very good results, however, may be secured by a suitable compromise, depending upon the outside temperature. There are various methods employed for the supply and removal of air, one of which is shown in Fig. 10. In this case air is admitted through side windows hinged at the bottom and having the triangular openings at the sides filled in so that the air will enter as indicated by the arrows.

This, however, should not be of sufficient volume to cause dangerous drafts upon the animals, and must be regulated according to outside conditions by varying the amount of sash opening.

Discharge ventilation is through monitor windows and is due to rising air currents caused by the animal heat. Another method, similar in principle, is shown in Fig. 9, and is adapted to low stables. In this case air leakage through doors or special openings into other parts of the building are depended upon for discharge ventilation. Another method is illustrated in Fig. 11, in which the air is delivered to the stalls above the mangers through special uptake flues.

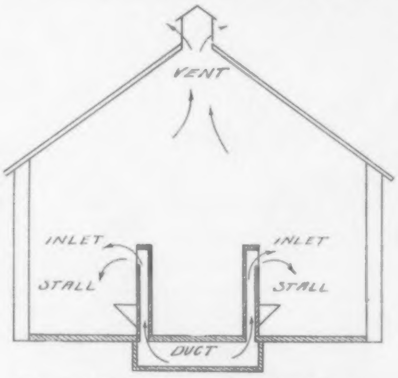


Fig. 11. Method of Stable Ventilation with Special Uptake Flues

The principal feature of this arrangement is the supplying of air to the uptakes through a long underground duct open at the ends.

The temperature of the earth 6 feet below the surface is considerably above that of the outside air in extremely cold weather, and in its passage through the duct the air temperature is raised somewhat before admission to the stable.

Entrance Gates, High School Group, Santa Monica, Cal.
Allison & Allison, Architects

PLATE DESCRIPTION.

High School Group, Santa Monica, Cal. Plates 37–39. This group of school buildings is indicative of the broad scope upon which California authorities have entered into the development of public school education. They have perhaps paid greater attention to the teaching of special trades and occupations than the educators of any other section of the country. In the development of this educational system there has been evolved a type of school building which meets the varied requirements from the teaching standpoint and is most appropriate for the climatic conditions.

The Santa Monica School has a large tract of ground and this permitted the segregation of the principal departments in separate buildings. The academic building forms the center of the group and contains the administration unit, class rooms for academic studies, and a large auditorium which is so arranged that it may be used for social and civic purposes aside from its school use. The second floor has a series of open-air class rooms, the south side of each being entirely open and only protected by awnings in wet weather.

The science, household, and fine arts courses occupy the building to the right of the main structure, and the manual arts and commercial courses occupy a building similar in size and arrangement to the left. These buildings, because of the contour of the land, are located at a grade lower than that of the academic building. The second floors are on the level of the first floor of the main building and direct communication between all the buildings is had at this level. In the manual arts building there are rooms for bookkeeping, typewriting, shorthand, and a section devoted to applied arts and mechanical drawing on the second floor. On the same floor of the science building there are three drawing class rooms, sewing and millinery rooms, and the domestic science department comprising a large cooking room, laundry, and a complete model flat.

Because of the ample area of the lot, boys' and girls' gymnasiums are located in separate buildings in close proximity to the athletic field. They are separated by two tennis courts and an exercise court for boys. The boys' building has only a locker room, with showers, etc., and a bowling alley; but the girls' building, in addition to these features, has also a gymnasium 44 by 70 feet.

High School of Commerce, Springfield, Mass. Plates 40, 41. This school is designed to accommodate 1500 pupils and in plan follows the generally accepted arrangement in large schools of placing the auditorium in the center of the building with easy access from the principal entrance. This hall will seat all of the pupils. An unusual feature of the plan is the placing of the gymnasium in the sub-basement. It occupies two floors in height and is lighted by large skylights at the base of an interior court. This court gives an opportunity on the upper floors to have a double row of class rooms in the rear of the building.

For a plan of such large and compact area, the lighting of corridors and inside rooms is especially well considered. Two smaller light courts are at the front of the building on either side of the auditorium. Around them are grouped staircases and toilets, insuring good light and natural ventilation. Skylights at the foot of these smaller courts light the lunch room in the basement, and the skylights in both gymnasium and lunch room are taken advantage of to light the basement corridors through windows in the corridor walls of these rooms. The upper corridors are lighted by windows opening on the courts.

The building is of fireproof construction with steel framing, reinforced concrete floor slabs, brick walls, and gypsum block partitions. It is built on filled ground and supported by concrete piles. The exterior is faced with dark red Pennsylvania shale brick of varying shades and trimmed with Bedford stone. The roof is of tar and gravel and all skylights are copper. The lunch room, corridor, and toilet-room floors are of terrazzo with coved bases. The basement walls are faced with white enameled brick and all corridor walls with a light gray enameled brick to a height of five feet. Staircases are iron with slate treads, with the exception of the short flight at the main entrance, which is of pink Tennessee marble.

Large locker rooms, providing an individual locker to each pupil, are located on each floor about the large court. Gymnasium suits are stored in ventilated lockers which are mounted in groups on trucks that can be wheeled into the drying rooms.

The building is heated from a battery of four boilers. The warmed air in the building, except that from the drying rooms and toilets, is washed and recirculated with automatic temperature and humidity control. Electricity for light and motor power is generated in the building.

The cost of the building, including heating and ventilating, plumbing, and electrical work, but exclusive of lighting fixtures, furniture, and movable fittings, was 19¼ cents per cubic foot.

House of C. A. Goodwin, Esq., Hartford, Conn. Plates 44, 45. The main axis of the house is in a north and south direction, the porch being at the southerly end and the principal entrance facing Scarborough street on the west. The walls are constructed of common bricks, which were of good quality and color, and were used as they came from the kilns without any selection. They are laid in Flemish bond and the joints raked to give texture. The exterior finish is stained oak, except window cases, etc., which are painted wood. The roof is of graduated slate with a quiet variation in color.

A point of practical interest is the arrangement of the kitchen chimney which projects from the wall of the house, allowing windows on either side. Over the range is a large ventilating flue into which is led a cast iron smoke pipe, thus forming an aspirating flue.

House of Daniel England, Esq., Pittsfield, Mass. Plates 46–48. This house is located on an average sized suburban lot, and though it is in fact a detached town house, in its general spirit it shows the character of a country house. The exterior walls are of a rough textured red brick with wood cornices. The entrance doorway and the columns and panels of the loggias are of white marble. The roof is of rough variegated slate. The living room is finished in oak. The dining room is paneled in whitewood, painted, and the hall and staircase are of butternut.

EDITORIAL COMMENT AND NOTES FOR THE MONTH

THE effort to obtain recognition by the government of certain obligations incurred in instituting the competition for the three buildings on the Mall in Washington, which competition had the approval of the President and Secretary of the Treasury at the time, still continues, and despite the usual fog of legal procedure, the facts seem to be as follows:

A competition was instituted and what amounted to a contract was signed by the President and a member of his Cabinet, which guaranteed that when appropriations were available the premiated competitors should be respectively employed upon the work. The competition occurred in good faith and certain architects were premiated. Time passed, the political complexion of the administration changed; the money became available for the Department of Justice Building designed by Mr. Donn Barber, and the Secretary of the Treasury, Mr. McAdoo, while stating he has no objection to Mr. Barber, shows a disposition to place the commission elsewhere, and claims the power and the right to do so if he sees fit for the public good in his own estimation.

His claim is based upon these facts as he states them:

First — At the time of the competition there was no act authorizing competitions, the Tarsney Act being inoperative.

Query — Was the act of the President and Secretary of the Treasury legitimate without consent of Congress?

Second — The requirements of the building have changed; more moneys are needed, therefore no matter what the provisions of the competition were, the facts at present make the competition plans inoperative, and the architect can therefore be changed.

Third — The terms of payment stated were that the architect was not to receive more than 6 per cent, and the implication (because nothing was stated) was that he could receive less, and it is the duty of the keeper of the Treasury to do as well as he can (that is the implication paralleling the other), thus it is his duty to bargain.

Query — Is bargaining a duty of the Secretary of the Treasury?

The fog of legal procedure has enshrouded the issue, and the final statement that an act of Congress can straighten a complication which is regrettable, etc. An Act of Congress! This is indeed a case in chancery of Jarndyce and Jarndyce in "Bleak House." Are technicalities an impregnable defense to the desire for autocratic action? What are the actual objections to the employment of Mr. Barber upon a building which he has shown his ability to design? The reasons assumed are manifestly inadequate, as Mr. McAdoo admits they do not prevent his employment. Why should Mr. McAdoo call them to his aid except to further his desire, and in that case why his desire, unless it be autocratic and personal? If that is admitted, there is naturally no appeal to an official who places his own desire before the keeping of an obligation in which both parties were acting in good faith, and the carrying out of the obligation would not be an injury. If Mr. McAdoo considers that the employment of Mr. Barber is inadvisable, why does he not state that fact and his reasons for his opinion, instead of retiring behind a series of technical possibilities, and thereby dodging the issue?

There is another element to be considered, and one that is broader than the attention to minor detail. For many years the city of Washington was an incongruous collection of unrelated units of mongrel character. These had been planned, placed, and erected without any coördination of thought and with a varied ignorance, by different departments and Congresses, with the constant statement that each and all, as they resided in Washington, and were members of the government, were preëminently qualified to treat the architectural problems of their residence. Locality of residence was a credential for knowledge in the Fine Arts.

Within some decades, men whose training and whose work has justified the request for their advice have formulated a scheme for the development of Washington. They have already proved their skill and justified their employment. It is with the approval of these men that the architects' designs for buildings are made. It is futile for any official, no matter of what rank, to place himself in opposition to accomplishment which is already recognized; for while there may be temporary obstacles, the conception of the development is too admirable to be long checked.

There is frequently a tendency to consider the various expressions of the Fine Arts as subject to the discrimination of average knowledge and taste, rather than to the appreciation of cultivated and educated good taste. The assumption carries with it a contradiction of the fact that men are but judged by their peers, and that encouragement toward the highest achievement is but obtained by the commendation of those capable of that achievement.

THE New York State Association of the American Institute of Architects held its annual convention in Albany, February 24, at which time resolutions were adopted protesting against the government heat, light, and power plant, the erection of which has been started on the Potomac River near the Park in Washington, D. C. The Association recommends that before the work further proceeds, the National Art Commission should make a thorough investigation into the matter, obtaining competent advice, and give adequate consideration to the sites more appropriately located.

THE activities of architects outside the confines of their profession have recently been augmented by two New York architects, George S. Chappell and Kenneth M. Murchison, who are joint authors of the new musical comedy, "Come to Bohemia." Mr. Murchison has written the music, and Mr. Chappell the book and lyrics.